

**NORTHEASTERN NEVADA REGIONAL DEVELOPMENT AUTHORITY  
COMBINED MEETING AGENDA OF THE EXECUTIVE COMMITTEE AND BOARD**

***IN PERSON***  
**Great Basin College**  
**McMullen Hall #102**

**1500 College Parkway  
Elko, NV 89801**

*Individuals attending in person will be asked to adhere to all COVID-19 precautions to prevent the risk of transmission between meeting participants.*

***ZOOM CONFERENCE***

*Login information and details will be provided to NNRDA Board and Executive Committee Members.  
Information regarding Public Comment can be found below:*

**July 22, 2020 at 1:00 pm**

**A. CALL TO ORDER: By NNRDA Chair of the board, Donna Bath, Silver Lion Farms**

The agenda for this meeting of the Northeastern Nevada Regional Development Authority (NNRDA) has been properly posted for this day and time in accordance with NRS requirement.

In accordance with NRS 241, the Authority may: (I) change the order of the agenda, (II) combine two or more agenda items for consideration, (III) remove an item from the agenda or delay discussion relating to an item on the agenda at any time, (IV) and if the agenda is not completed, recess the meeting and continue on another specified date and time, (V) place reasonable restrictions on time, place, and manner of public comment and that comment based on viewpoint may not be restricted.

**DUE TO COVID-19 AND UPON DIRECTIVES FROM THE GOVERNOR, THE POSTING REGULATIONS HAVE TEMPORARILY CHANGED AND ATTENDANCE AT MEETINGS IS VERY LIMITED**

NNRDA's monthly board meeting agenda and board meeting minutes are now posted for public viewing on our website at [www.nnrda.com](http://www.nnrda.com).

**B. ROLL CALL: Introductions of Board Members and Guests**

**C. PUBLIC COMMENT PERIOD:**

**PUBLIC COMMENT WILL BE ACCEPTED IN PERSON AND VIA EMAIL. WE ENCOURAGE THE PUBLIC TO PARTICIPATE IN THE MEETING BY SUBMITTING COMMENTS TO [KRIS@NNRDA.COM](mailto:KRIS@NNRDA.COM) – WHERE THEY WILL BE THEN ADDED TO THE RECORD.**

This agenda item is to provide time for the general public to address the Authority regarding items of concern. Action cannot be taken at this time, but a matter can be set on the agenda for a future meeting, as appropriate.

**D. MINUTES:**

- 1) Approval of the June 24, 2020 Combined Executive Committee and Board Meeting Minutes.

**For Possible Approval**

**E. NNRDA FINANCIALS:**

- 1) Review and approval of Financials for June 2020.

**For Possible Approval**

**NORTHEASTERN NEVADA REGIONAL DEVELOPMENT AUTHORITY  
COMBINED MEETING AGENDA OF THE EXECUTIVE COMMITTEE AND BOARD**

**F. NEW BUSINESS:**

- 1) Review, discussion, and possible approval regarding 2020-2021 NNRDA Annual Budget.  
**For Possible Action**
- 2) Presentation, review, discussion, and possible approval regarding the NNRDA commissioned technical report UCED 2019/20-8 *A Market and Technical Feasibility Study of Recycling Opportunities in Northeastern Nevada* as presented by Dr. Fred Steinmann, University of Nevada Reno College of Business  
**For Possible Action**
- 3) Presentation, review, discussion, and possible approval of the new five-year Comprehensive Economic Development Strategy for the Northeastern Nevada Regional Development Authority for 2020 through 2025 with review and tentative approval of the related community and county-level Comprehensive Economic Development Strategy documents for Elko County (City of Elko including the communities of Jackpot and Spring Creek, the City of Carlin, the City of Wells, and the City of West Wendover), Eureka County, and Lander County as completed by the University of Nevada, Reno's University Center for Economic Development. Direct staff to move forward with tentative submission of these documents to the U.S. Economic Development Administration.  
**For Possible Action**
- 4) Review, discussion, and possible approval to prepare and submit application for the Northeastern Nevada Regional Development Authority to become a U.S. Economic Development Administration recognized Economic Development District.  
**For Possible Action**

**G. REPORTS**

- 1) **Status Report and Leads:** Staff will provide status on various activities, projects and leads.
- 2) **RNDC:** Report from Shirley Allen-Kellerman, RNDC, Business Lending Representative.

**H. BOARD MEMBER REPORTS**

Board members will be provided the opportunity to give a short report on their business or their city/county.

**I. PUBLIC COMMENT PERIOD:**

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**J. ADJOURN**

**Respectfully submitted:**

\_\_\_\_\_ KA \_\_\_\_\_  
**Kris Ashdown, NNRDA Executive Assistant**

**NORTHEASTERN NEVADA REGIONAL DEVELOPMENT AUTHORITY  
COMBINED MEETING MINUTES OF THE EXECUTIVE COMMITTEE AND BOARD**

**COVID-19**

**Social distancing restrictions have forced us to conduct this meeting of the Northeastern Nevada Board of Directors and Executive Committee contrary to standard protocol. This meeting will be conducted via the Zoom online meeting platform.**

*Login information and details will be provided to NNRDA Board and Executive Committee Members.*

*Information regarding Public Comment can be found below:*

**June 24, 2020 at 1:00 pm**

**A. CALL TO ORDER: By NNRDA Chair of the board, Kinross Gold**

The agenda for this meeting of the Northeastern Nevada Regional Development Authority (NNRDA) has been properly posted for this day and time in accordance with NRS requirement.

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**B. ROLL CALL: Introductions of Board Members and Guests**

**STAFF:**

Sheldon Mudd-Executive Director  
Jan Morrison-EDO-West

Kris Ashdown-Executive Assistant

**EXECUTIVE COMMITTEE:**

Michelle Beecher-City of Ely  
Vince Mendiola-City of Winnemucca  
Madison Mahon-City of Carlin  
Suzanne Featherston-Kinross- Bald Mtn

Layla Walz-City of Wells  
Jon Karr-Elko County  
Marlene Brissenden-Humboldt County

**BOARD MEMBERS:**

Dave Mendiola-Humboldt County  
Susan Goddard-EDFP

Matt McCarty-Great Basin College  
Donna Bath-Silver Lion Farms

**GUESTS:**

Shirley Alen-Kellerman-RNDC

Patricia Herzog-GOED

**C. PUBLIC COMMENT PERIOD:**

**DUE TO COVID-19 RESTRICTIONS, WE WILL NOT BE ABLE TO ACCOMMODATE PUBLIC COMMENT IN THE STANDARD FORMAT. WE ENCOURAGE THE PUBLIC TO PARTICIPATE IN THE MEETING BY SUBMITTING COMMENTS VIA EMAIL TO [KRIS@NNRDA.COM](mailto:KRIS@NNRDA.COM) – WHERE THEY WILL BE THEN ADDED TO THE RECORD.**

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**NORTHEASTERN NEVADA REGIONAL DEVELOPMENT AUTHORITY  
COMBINED MEETING MINUTES OF THE EXECUTIVE COMMITTEE AND BOARD**

**D. MINUTES:**

- 1) Approval of the May 28, 2020 Combined Executive Committee and Board Meeting Minutes.

**For Possible Approval**

**ACTION:** Marlene Brissenden made the motion to approve the May 28, 2020 Combined Executive Committee and Board Meeting Minutes. Jon Karr seconded the motion. The motion passed.

**E. NNRDA FINANCIALS:**

- 1) Review and approval of Financials for May 2020.

**For Possible Approval**

**ACTION:** Marlene Brissenden made the motion to approve the Financials for May 2020. Madison Mahon seconded the motion. The motion passed.

**F. NEW BUSINESS:**

- 1) Review, discussion, and possible approval for FY2020-2021 NNRDA Chairman & Vice-Chair.

**For Possible Approval**

**Sheldon Mudd nominated Terri Clark with NNRH for Vice-chair and Donna Bath with Silver Lion Farms As Chair.**

**ACTION:** Marlene Brissenden made the motion to approve Sheldon's nominations for Donna Bath to be the Chair Person and Terri Clark to be the Vice Chair Person for NNRDA's fiscal year 2020-2021. Vince Mendiola seconded the motion. The motion passed.

- 2) Review, discussion, and possible action regarding 2020-2021 NNRDA Annual Budget.

**For Possible Approval**

**Sheldon Mudd let the Board know that after this month the counties and cities will have already voted on their budgets so we will have solid numbers to base our budget on. It might be in our best interest to hold off for another month for accuracy. Sheldon expressed his biggest concern with the new budget is to have money available for our marketing objectives. We have begun to see a lot more momentum than we had ever expected and we don't want to lose that by going silent. Sheldon will re-work the numbers for the budget and will present them next month if that's what the Board decides.**

**ACTION:** Marlene Brissenden made a motion to hold off for one more month regarding the 2020-2021 Annual Budget. Michelle Beecher seconded the motion. The motion passed.

**G. REPORTS**

- 1) **Status Report and Leads:** Staff will provide status on various activities, projects and leads.

**Sheldon Mudd let the Board know that the lawyers are still going through our Interlocal Agreement.**

**Sheldon sent the latest copy to them 2 weeks ago and explained the situation/our organization to them. We are hoping to have it sorted out by next month.**

**We had a ribbon cutting for Shirley Alen-Kellerman with Rural Nevada Development Corporation (RNDC) who moved into our office on July 1<sup>st</sup>. We have added RNDC back to our reports section, so Shirley will give a report following this. Sheldon thinks having a representative from RNDC right here in the office will be beneficial for the organization.**

**The newly formed committee for the Revolving Loan Fund (RLF) program had their initial discussion. They discussed the new Nevada Gold Mines program and which area it would cover so if NNRDA were to move forward with their own RLF program then we would use it to fill in the gap where NGM isn't going to cover. We have initiated talks with RNDC to see if they would be the administrators for our RLF somewhat like they will be doing for NGM's program. We will try to have Mary Kerner with RNDC on one of our next calls to explain how they will be involved.**

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Mining Connect (formerly known as SAMSA) located in Ontario, Canada contacted Sheldon to discuss a partnership with NNRDA to set up some office space for maybe 10 companies for a year to see if they could establish a footprint and want to stay. Obviously, NNRDA would want them to be companies that would fill a needed gap for our area. If it all works out, it could funnel some business to our area. This is still in the works and is about a year out. Sheldon expressed to them that he doesn't want competition for our local businesses unless it's healthy competition. Sheldon has been talking with the state as well to see what other resources might be available. The Canadian folks have already secured the cash so they could stay for at least a year.

As far as marketing, we are expecting an article about our region to come out in the Business In Focus magazine next month. The GSLI marketing company that we've been working with has sent us a lead that we have been working on in the last few weeks. Sheldon sent out 350 email invitations and then held a live presentation online yesterday to introduce NNRDA and to let them know what northeastern Nevada has to offer. There wasn't a lot of participation but if we keep doing these presentations hopefully we can introduce ourselves to everyone out there.

We have added new pages to our website to let the world know that we are not immune but more resistant to the recession, COVID and regulation. We also added a page for Unique Opportunities where you can find some of the studies that have been done.

The CEDS Study is wrapping up. Fred Steinman is planning on being in Wells for a meeting on July 7<sup>th</sup> as the last step. Because of COVID, the university will not allow any workshops but he can give a presentation of the final result so we're moving forward and will have Fred at our next meeting to present the Regional CEDS Document and the Recycling Study.

Jan Morrison wanted to follow up on the BuildNV Core Construction project. They have funding to start but will continue looking for more funding to keep the program healthy and capable of expanding. These classes for construction and building maintenance can be offered at any of the GBC locations which is in ALL of our communities! They want to start scheduling for the upcoming year.

Humboldt County housing, after 2 years of nurturing, is also moving forward. Two home builders have new inventory in their projects, with more on the way. The huge Frontier Village project breaks ground in November. A new luxury home builder is entering the market in July but the name has not been released yet. With the 4<sup>th</sup> builder going into Winnemucca, they now have new homes in the \$195,000 - \$500,000 range being built. This was desperately needed as there are less than 25 resale homes on the market.

Jan has continued working the NV Small Business Development Center, Kathy Halbardier on the PPP loans which some are now beginning to fund.

The billion dollar development that may locate near the Pershing/Humboldt border is moving forward so hopefully next meeting there'll be an announcement.

2) **RNDC:** Report from Shirley Allen-Kellerman, RNDC, Business Lending Representative.

Shirley Alen-Kellerman thanked NNRDA for the office space and the opportunity to report for RNDC. Shirley is anticipating being busy with applicants for the new NGM's loan program that is for businesses that have been opened since January 2020 and have been affected by the COVID. The planned area of coverage is the I 80 corridor which includes Elko, Lander, Humboldt, and Eureka counties. The loans range from \$5,000 to \$100,000 with a low 2% fixed APR. Shirley will be traveling all along the corridor talking to people and helping with applications and/or questions these businesses might have.

#### **H. BOARD MEMBER REPORTS**

Board members will be provided the opportunity to give a short report on their business or their city/county.

#### **I. PUBLIC COMMENT PERIOD:**

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This agenda item is to provide time for the general public to address the Authority regarding items of concern. Action cannot be taken at this time, but a matter can be set on the agenda for a future meeting, as appropriate.

- J. ADJOURN: Vince Mendiola made the motion to adjourn. Madison Mahon seconded the motion. The motion passed. The meeting was adjourned at 1:55 pm.**

**Respectfully submitted:**

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KA  
**Kris Ashdown, NNRDA Executive Assistant**

DRAFT



**NORTHEASTERN NEVADA**  
**REGIONAL DEVELOPMENT AUTHORITY**  
**BALANCE SHEET**

**2018-2019**

MONTH-June

**REVENUE**

DESCRIPTION	BUDGET	YEAR TO DATE	BALANCE
BEGINNING FUND BALANCE	\$140,655.00	\$140,655.00	\$0.00
BUSINESS TAX (AB317)	\$0.00	\$0.00	\$0.00
GOED	\$270,000.00	\$270,000.00	\$0.00
GOED - MINING SPECIALIST	\$2,400.00	\$2,400.00	\$0.00
LOCAL GOVERNMENT CONT.	\$107,464.00	\$108,833.10	-\$1,369.10
PRIVATE SECTOR CONT.	\$40,000.00	\$35,700.00	\$4,300.00
GRANTS	\$0.00	\$17,500.00	-\$17,500.00
MISC. GRANTS	\$0.00	\$0.00	\$0.00
MISC. REVENUE	\$0.00	\$111.11	-\$111.11
REVENUE - SUBTOTAL	\$560,519.00	\$575,199.21	-\$14,680.21

**EXPENDITURES**

ACCT CODE	DESCRIPTION	BUDGET	YEAR TO DATE	BALANCE
1001	SALARIES	\$240,723.00	\$209,245.51	\$31,477.49
2001,03,05,06	BENEFITS	\$116,989.91	\$98,880.52	\$18,109.39
3102	CLIENT SERVICES	\$2,000.00	\$1,815.16	\$184.84
3104	LEGAL/PROFESSIONAL	\$2,000.00	\$82.50	\$1,917.50
3204	OTHER CONTRACTUAL	\$33,000.00	\$1,400.00	\$31,600.00
3501	EQUIPMENT RENTAL	\$0.00	\$0.00	\$0.00
3502	BUILDING RENTAL	\$5,400.00	\$5,400.00	\$0.00
4001	TELEPHONE	\$4,000.00	\$3,759.46	\$240.54
4101	MISCELLANEOUS	\$1,000.00	\$481.75	\$518.25
4103	TRAVEL	\$15,000.00	\$10,774.86	\$4,225.14
4104	DUES	\$100.00	\$0.00	\$100.00
4105	TRAINING	\$1,000.00	\$0.00	\$1,000.00
4107	CONFERENCE SERVICES	\$3,000.00	\$395.00	\$2,605.00
4116	MARKETING	\$16,000.00	\$7,770.14	\$8,229.86
4129	SETTLEMENTS - LANDER			
5101	OFFICE SUPPLIES	\$3,500.00	\$2,913.32	\$586.68
5102	POSTAGE	\$500.00	\$140.04	\$359.96
5205	SPECIAL SUPPLIES	\$0.00	\$0.00	\$0.00
5206	INTERNET SERVICE, WEBSITE	\$19,000.00	\$14,489.00	\$4,511.00
5210	BOOKS - SUBSCRIPTIONS	\$300.00	\$87.27	\$212.73
5902	EQUIPMENT	\$500.00	\$1,168.96	-\$668.96
6101	CAPITAL	\$5,000.00	\$0.00	\$5,000.00
9101	CONTINGENCY 3%	\$16,816.00	\$0.00	\$16,816.00
EXPENDITURES - SUBTOTAL		\$485,828.91	\$358,803.49	\$127,025.42
TOTAL BALANCE		\$216,395.72		

Membership Due Projections 2020-2021					15% Cut	20%	25%	30%
	Population	Prison Pop	Adjustments	Dues @ \$1.10	Dues @ \$.93	Dues @ \$.88	Dues @ \$.82	Dues @ \$.77
Elko County	55116		55116	\$40,000.00	\$34,000.00	\$32,000.00	\$30,000.00	\$28,000.00
West Wendover	4469		4469	\$4,915.90	\$4,156.17	\$3,932.72	\$3,664.58	\$3,441.13
Wells	1366		1366	\$1,502.60	\$1,270.38	\$1,202.08	\$1,120.12	\$1,051.82
Elko	21199		21199	\$23,318.90	\$19,715.07	\$18,655.12	\$17,383.18	\$16,323.23
Carlin	2663		2663	\$2,929.30	\$2,476.59	\$2,343.44	\$2,183.66	\$2,050.51
White Pine	10826	1062	5547	\$6,101.70	\$5,158.71	\$4,881.36	\$4,548.54	\$4,271.19
Ely	4217		4217	\$4,638.70	\$3,921.81	\$3,710.96	\$3,457.94	\$3,247.09
Eureka	1955		1955	\$2,150.50	\$1,818.15	\$1,720.40	\$1,603.10	\$1,505.35
Lander	6109		6109	\$6,719.90	\$5,681.37	\$5,375.92	\$5,009.38	\$4,703.93
Humboldt	17079		9176	\$10,093.60	\$8,533.68	\$8,074.88	\$7,524.32	\$7,065.52
Winnemucca	7903		7903	\$8,693.30	\$7,349.79	\$6,954.64	\$6,480.46	\$6,085.31
Pershing	6935	1710	3240	\$3,564.00	\$3,013.20	\$2,851.20	\$2,656.80	\$2,494.80
Lovelock	1985		1985	\$2,183.50	\$1,846.05	\$1,746.80	\$1,627.70	\$1,528.45

\$116,811.90	\$98,940.97	\$93,449.52	\$87,259.78	\$81,768.33
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NORTHEASTERN NEVADA  
REGIONAL DEVELOPMENT AUTHORITY  
PROPOSED BUDGET (COMPARISON)

**2020-2021**

**REVENUE**

DESCRIPTION	19-20 BUDGE	19-20 PROJ	19-20 ACTUAL	20-21 NOCHG	15% CUT	15% CUT	15% CUT	20% CUT	25% CUT
BEGINNING FUND BALANCE	\$249,582.83	\$249,582.83	\$249,582.83	\$277,118.63	\$277,118.63	\$277,118.63	\$277,118.63	\$277,118.63	\$277,118.63
BUSINESS TAX (AB317)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
GOED	\$270,000.00	\$302,500.00	\$302,500.00	\$330,000.00	\$280,500.00	\$280,500.00	\$280,500.00	\$264,000.00	\$247,500.00
RNDC	\$2,400.00	\$2,400.00	\$2,400.00	\$2,400.00	\$2,400.00	\$2,400.00	\$2,400.00	\$2,400.00	\$2,400.00
LOCAL GOVERNMENT CONTR.	\$111,744.60	\$115,519.40	\$115,519.40	\$116,812.00	\$98,941.00	\$98,941.00	\$98,941.00	\$93,449.52	\$87,260.00
PRIVATE SECTOR CONTR.	\$33,500.00	\$26,500.00	\$27,000.00	\$27,000.00	\$22,525.00	\$22,525.00	\$22,525.00	\$21,200.00	\$19,875.00
GRANTS	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
MISC. GRANTS	\$0.00	\$20,000.00	\$20,000.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
MISC. REVENUE	\$0.00	\$74.11	\$74.11	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
REVENUE - SUBTOTAL	\$417,644.60	\$466,993.51	\$467,493.51	\$476,212.00	\$404,366.00	\$404,366.00	\$404,366.00	\$381,049.52	\$357,035.00

**EXPENDITURES**

AC DESCRIPTION	BUDGET	19-20 PROJ	19-20 ACTUAL	20-21 NOCHG	15% CUT FS	15% CUT -1S	15% CUT -1S	20% CUT -1S	25% CUT -1S
SALARIES	\$263,652.00	\$224,194.04	\$232,844.47	\$265,182.81	\$265,182.81	\$222,783.00	\$222,783.00	\$222,783.00	\$222,783.00
BENEFITS	\$111,369.00	\$88,209.64	\$91,682.06	\$121,704.00	\$121,704.00	\$96,521.00	\$96,521.00	\$96,521.00	\$96,521.00
CLIENT SERVICES	\$5,000.00	\$499.52	\$499.52	\$1,500.00	\$500.00	\$5,000.00	\$10,000.00	\$2,500.00	\$0.00
LEGAL/PROFESSIONAL	\$2,000.00	\$0.00	\$0.00	\$2,000.00	\$2,000.00	\$2,000.00	\$2,000.00	\$2,000.00	\$2,000.00
OTHER CONTRACTUAL	\$33,000.00	\$51,399.98	\$51,399.98	\$2,000.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
EQUIPMENT RENTAL	\$500.00	\$0.00	\$0.00	\$500.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
BUILDING RENTAL	\$5,400.00	\$5,400.00	\$5,400.00	\$5,400.00	\$5,400.00	\$5,400.00	\$5,400.00	\$5,400.00	\$5,400.00
TELEPHONE	\$4,000.00	\$3,379.81	\$3,370.19	\$5,000.00	\$5,000.00	\$4,000.00	\$4,000.00	\$4,000.00	\$4,000.00
MISCELLANEOUS	\$3,000.00	\$45.00	\$95.00	\$1,000.00	\$1,000.00	\$500.00	\$500.00	\$500.00	\$0.00

TRAVEL	\$20,000.00	\$7,739.31	\$8,576.42	\$5,000.00	\$5,000.00	\$8,000.00	\$8,000.00	\$5,000.00	\$5,000.00
DUES	\$1,000.00	\$0.00	\$0.00	\$500.00	\$0.00	\$500.00	\$500.00	\$0.00	\$0.00
TRAINING	\$3,000.00	\$0.00	\$0.00	\$1,000.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
CONFERENCE SERVICES	\$10,000.00	\$2,772.00	\$2,772.00	\$3,000.00	\$0.00	\$500.00	\$500.00	\$0.00	\$0.00
MARKETING	\$50,000.00	\$36,726.50	\$34,226.50	\$30,000.00	\$2,000.00	\$35,000.00	\$50,000.00	\$20,000.00	\$0.00
OFFICE SUPPLIES	\$4,000.00	\$2,131.16	\$1,303.50	\$2,500.00	\$2,000.00	\$1,500.00	\$2,000.00	\$1,500.00	\$1,000.00
POSTAGE	\$500.00	\$27.35	\$12.15	\$100.00	\$100.00	\$100.00	\$100.00	\$100.00	\$100.00
SPECIAL SUPPLIES	\$500.00	\$0.00	\$0.00	\$100.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
INTERNET SERVICE, WEB	\$10,000.00	\$8,089.00	\$7,590.00	\$10,000.00	\$10,000.00	\$10,000.00	\$10,000.00	\$10,000.00	\$10,000.00
BOOKS - SUBSCRIPTIONS	\$300.00	\$185.92	\$185.92	\$300.00	\$300.00	\$300.00	\$300.00	\$300.00	\$300.00
EQUIPMENT	\$500.00	\$0.00	\$0.00	\$500.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
CAPITAL	\$5,000.00	\$0.00	\$0.00	\$5,000.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
CONTINGENCY 3%	\$19,185.00	\$0.00	\$0.00	\$13,868.60	\$12,605.60	\$11,763.12	\$12,378.12	\$11,118.12	\$10,413.12
EXPENDITURES - SUBT	\$551,906.00	\$430,799.23	\$439,957.71	\$476,155.41	\$432,792.41	\$403,867.12	\$424,982.12	\$381,722.12	\$357,517.12
ANNUAL PROJ BALANCE	<b>-\$134,261.40</b>	<b>\$36,194.28</b>	<b>\$27,535.80</b>	<b>\$56.59</b>	<b>-\$28,426.41</b>	<b>\$498.88</b>	<b>-\$20,616.12</b>	<b>-\$672.60</b>	<b>-\$482.12</b>
<b>PROJ FINAL BALANCE</b>	<b>\$115,321.43</b>	<b>\$285,777.11</b>	<b>\$277,118.63</b>	<b>\$277,175.22</b>	<b>\$248,692.22</b>	<b>\$277,617.51</b>	<b>\$256,502.51</b>	<b>\$276,446.03</b>	<b>\$276,636.51</b>

**A MARKET AND TECHNICAL FEASIBILITY STUDY OF  
RECYCLING OPPORTUNITIES IN NORTHEASTERN NEVADA**



# **A MARKET AND TECHNICAL FEASIBILITY STUDY OF RECYCLING OPPORTUNITIES IN NORTHEASTERN NEVADA**

Frederick A. Steinmann

and

Kathryn L. Muzzin

and

Thomas R. Harris

Frederick Steinmann is an Assistant Research Professor with the University Center for Economic Development, College of Business at the University of Nevada, Reno.

Kathryn Muzzin is a Graduate Student in the College of Business and a Graduate Assistant with the Nevada Small Business Development Center at the University of Nevada, Reno.

Thomas Harris is a Professor of Economics and Director of the University Center for Economic Development, College of Business at the University of Nevada, Reno.

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Frederick A. Steinmann, DPPD  
University Center for Economic Development  
University of Nevada, Reno  
The College of Business  
Mail Stop 204  
Reno, Nevada 89557  
Phone: 775.784.1655



UCED  
University of Nevada, Reno  
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The College of Business

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# 1.0 Introduction, Overview and Executive Summary

In September 2019, representatives from the Northeastern Nevada Regional Development Authority contracted with the University Center for Economic Development, part of the College of Business at the University of Nevada, Reno, to complete a market and technical feasibility study of recycling opportunities for the five-county Northeastern Nevada area. This University Center for Economic Development technical report summarizes the results of this market and technical feasibility study.

The Northeastern Nevada Regional Development Authority was established in 2012 as a result of the development of the state of Nevada's comprehensive statewide economic development plan, *Moving Nevada Forward: A Plan for Excellence in Economic Development 2012-2014*. Initially, the Northeastern Nevada Regional Development Authority's footprint consisted only of Elko County and the incorporated cities held therein. Between 2014 and 2016, Humboldt County, Eureka County, Lander County, and White Pine County joined the Northeastern Nevada Regional Development Authority followed by Pershing County in 2019. This market and technical feasibility study of recycling opportunities for Northeastern Nevada covers the development of a new recycling industry sector for the five counties of Humboldt County, Elko County, Eureka County, Lander County, and White Pine County and was developed in concert with the Northeastern Nevada Regional Development Authority's new five-year Comprehensive Economic Development Strategy for 2020 through 2025.

## 1.1 Overview and Executive Summary

Based upon the results of the analysis completed and presented throughout this University Center for Economic Development technical report, it is concluded that market and technical feasibility for the development of a new recycling industry in Northeastern Nevada does **not** currently exist. However, various recycling opportunities, and the potential for a future recycling industry in Northeastern Nevada **does** exist given the appropriate use and combination of targeted public-sector policies and incentives and improved support and championing by key private-sector stakeholders.

The successful development of a growing and sustainable recycling industry is largely dependent upon two critical conditions. First, there must be a substantial and growing source of potentially recyclable materials (inputs) to support ongoing and expanded recycling processes including in the production of new component parts, materials and finished goods that utilize various recycled commodities. Second, regional and national market prices for the recycled commodities must be great enough to cover the financial costs of collecting and processing the potentially recyclable materials (outputs) in order to support and grow the profitability of individual firms involved in the production of the recycled commodities. In order to effectively and efficiently take advantage of these conditions, a region must also have the requisite infrastructure to support the

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collection and sorting of industrial and municipal wastes and the requisite private-sector firm structure and presence to conduct the processing and production of recyclable commodities. General public support, support from the private-sector, and public-sector regulatory and policy support must each exist for any recycling industry sector to be successful in both the short-term and long-term.

Regarding the first condition, the existence of a substantial and growing source of potentially recyclable materials (inputs), the amount of industrial waste (generated by individual firms and industries) and the amount of municipal solid waste (generated mainly by individual households) is a direct function of the levels of economic activity, personal consumption patterns, and population growth levels measured for a defined geographic area. While general levels of economic activity have increased substantially throughout the Northeastern Nevada region over the last several years, total population has grown at a rate measurably slower than that of the entire state of Nevada, 2.9 percent growth in Northeastern Nevada compared to 5.8 percent statewide, between 2013 and 2017. The total number of households in Northeastern Nevada and the overall size of the region's civilian workforce, growing by 1.4 percent and 3.6 percent respectively between 2013 and 2017, have also lagged behind the rate of growth in the state's total number of households and the state's overall civilian workforce, growing by 5.3 percent and 6.9 percent respectively between 2013 and 2017.

Total employment opportunities created within the region's primary industry sectors, including the Mining, Quarrying, and Oil and Gas industry sector, the Accommodation and Food Services industry sector, the Retail Trade industry sector, and the Construction industry sector, have all declined in recent years, declining by -6.0 percent, -7.0 percent, -1.0 percent, and -15.0 percent respectively between 2013 and 2018. Only has growth in the Government industry sector (the region's second largest industry sector) been positive, increasing by 1.0 percent between 2013 and 2018. Overall growth in the region's Administrative and Support and Waste Management and Remediation industry sector, measured in the total number of employment opportunities created by firms within the industry sector, also declined between 2013 and 2018, declining by 219 total employment opportunities or -19.0 percent.

While significant variation in the amount of total industrial waste and total municipal solid waste collected by landfills located within the five Northeastern Nevada counties existed between 2013 and 2018 and while there was also significant variation in the year-to-year amount of total industrial waste and total municipal solid waste collected at each individual landfill, regional totals of both sources of waste declined significantly between 2013 and 2018. Between 2013 and 2018, the total amount of industrial waste collected by landfills operating within the Northeastern Nevada region decreased by approximately 9,448 total metric tonnes, or by -5.7 percent. Between 2013 and 2018, the total amount of municipal solid waste collected by landfills operating within the Northeastern Nevada region decreased by approximately 3,907 total metric tonnes, or by -4.4 percent. The total amount of industrial waste and municipal solid waste combined and collected by landfills operating within the Northeastern Nevada region decreased by approximately 13,355 metric tonnes, or by -5.2 percent, between 2013 and 2018.

Annually, there was considerable year-to-year variability in the growth or decrease of both industrial waste and municipal solid waste collected by individual landfills operating throughout

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Northeastern Nevada. Between 2013 and 2014, the total amount of all waste (industrial and municipal solid combined) collected by all area landfills increased by just 0.7 percent and then decreased by -9.9 percent between 2014 and 2015 followed by a further decrease of -5.0 percent between 2015 and 2016. Between 2016 and 2017, the total amount of all waste collected by area landfills increased by 68.3 percent followed by a decrease of -34.6 percent between 2017 and 2018. Similar year-to-year volatility was observed for just the amount of total industrial waste and for just the amount of total municipal solid waste collected by landfills operating throughout the region. Additional similar year-to-year volatility in the total amount of industrial waste, in the total amount of municipal solid waste, and in the total amount of all waste (industrial and municipal solid combined) collected by each individual landfill operating in Humboldt County, Elko County, Eureka County, Lander County, and White Pine County were observed.

Regarding the second condition, the prevalence of relatively high and increasing regional and national market prices for recycled commodities (outputs), the regional and national prices for recycled plastic commodities, recycled metal commodities, and recycled paper commodities have generally trended downward between 2016 and 2020 and, in some cases, have trended downward at a significantly negative rate. For the three separate recycled plastic commodities examined as part of this study, only one had observable and predicated increases in both regional and national market prices. For PET Baled plastics, the regional market price declined by -51.6 percent and the national market price declined by -14.2 percent between 2016 and 2020 and the predicated future regional and national market prices are expected to decline by -\$0.0001 per pound and -\$0.0003 per pound. For Colored HDPE plastics, the regional market price remained unchanged between 2016 and 2020 and the national market price declined by -16.5 percent between 2016 and 2020. The anticipated future regional and national market prices for Colored HDPE plastics are predicted to decline by -\$0.0001 per pound and -\$0.0002 per pound respectively.

For the six separate recycled metal commodities examined as part of this study, only the national price for Aluminum Cans Loose and only the regional price of Steel Cans Sorted Baled saw increases between 2016 and 2020. Steel Cans Sorted Baled was the only recycled metal commodity to have a predicted future increase. For Aluminum Cans Sorted, the regional price declined by -9.8 percent and the national price declined by -8.3 percent and the predicted future regional and national prices are expected to decline by -\$0.0004 per pound and by -\$0.0004 per pound respectively. For Aluminum Cans Loose, there was no growth in the regional price between 2016 and 2020 and a minor increase in the national price of just 3.4 percent between 2016 and 2020. The predicated future regional price for Aluminum Cans Loose is expected to remain unchanged and the predicted future national price of Aluminum Cans Loose is expected to decline by -\$0.0007 per pound. For Steel Cans Sorted Baled, the regional price increased by 78.3 percent between 2016 and 2020 and the future predicted regional price is expected to increase by \$0.11 per ton. For Steel Cans Sorted Baled, the national price decreased by -11.1 percent between 2016 and 2020 and the future predicted national price is expected to decrease by -\$0.02 per ton.

For Steel Cans Sorted Densified, the regional price remained unchanged between 2016 and 2020 and future predicted regional prices are expected to remain unchanged with no measurable growth. The national price for Steel Cans Sorted Densified decreased by -45.5 percent between

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2016 and 2020 and the future predicted national price is expected to decrease by -\$0.04 per ton. For Steel Cans Loose, the regional price remained unchanged between 2016 and 2020 and future predicted regional prices are expected to remain unchanged with no measurable growth. The national price for Steel Cans Loose decreased by -40.0 percent between 2016 and 2020 and the future predicted national price is expected to decrease by -\$0.01 per ton. For White Goods Loose (discarded household appliances), both the regional and national price between 2016 and 2020 remained unchanged. The future predicted regional and national price for White Goods Loose are both expected to remain unchanged with no measurable growth in either price.

Change in the regional and national prices for each of the four recycled paper commodities and for the predicated future change of the four recycled paper commodities examined in this study were all significantly negative. For Mixed Paper, the regional price declined by -101.0 percent between 2016 and 2020 and the future predicted regional price is expected to decline by -\$1.39 per ton. The national price for Mixed Paper declined by -102.5 percent between 2016 and 2020 and the future predicted national price is expected to decline by -\$1.21 per ton. For Sorted Residential Paper, the regional price declined by -92.3 percent between 2016 and 2020 and the future predicated regional price is expected to decline by -\$1.32 per short ton. The national price for Sorted Residential Paper declined by -92.3 between 2016 and 2020 and the future predicted national price is expected to decline by -\$1.19 per short ton.

For Paper Corrugated Containers, the regional price declined by -89.1 percent between 2016 and 2020 and the future predicted regional price is expected to decline by -\$1.66 per short ton. The national price for Paper Corrugated Containers declined by -76.7 percent between 2016 and 2020 and the future predicted national price is expected to decline by -\$1.46 per short ton. For Sorted Office Paper, the regional price declined by -43.8 percent between 2016 and 2020 and the future predicted regional price is expected to decline by -\$0.60 per short ton. The national price for Sorted Office Paper declined by -42.9 percent between 2016 and 2020 and the future predicated national price is expected to decline by -\$0.52 per short ton.

Despite the largely unfavorable observed and predicted conditions of the required inputs and expected outputs needed to support a sustainable and growing recycling industry in Northeastern Nevada, there continues to be ongoing and expanded use of the various recycle commodities examined in this study in the production of new component parts, materials and finished goods both nationally and globally. These uses, detailed in Section 4.0 of this University Center for Economic Development technical report, represent possible opportunities for a future recycling industry in Northeastern Nevada if the observed and predicted conditions of the required inputs and expected outputs improve. The development and implementation of new recycling programs and projects in Nevada and the potential to model and use other recycling programs and projects developed in other states, each detailed in Section 5.0 of this University Center for Economic Development technical report, can provide guidance for both public-sector and private-sector initiated economic development efforts employed and designed to support a future recycling industry in Northeastern Nevada.



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## 2.0 Anticipating Future Growth in Waste Levels in Northeastern Nevada

According to the U.S. Environmental Protection Agency, the amount of municipal solid waste and other waste products produced by individuals and private-sector firms is directly influenced by the levels of economic activity, personal consumption patterns, and population growth. Developed societies, including industrial and post-industrial economies such as the United States, generally generate and produce large amounts of municipal solid waste (food wastes, packaged goods, disposable goods, used electronics, etc.) and commercial and industrial wastes (demolition debris, incineration residues, refinery sludges, etc.).

For individual communities and economic regions such as the Northeastern Nevada Regional Development Authority region, as population levels and economic activity levels increase, the total amount of municipal solid waste and commercial and industrial wastes generated throughout the region will likely increase as well. This section presents a general overview of the Northeastern Nevada economy including an analysis of the waste management and recycling industry within the region. The purpose of this section is to demonstrate the potential for growing the waste management and recycling industry within the Northeastern Nevada region as part of a larger economic development strategy.

### 2.1 General Socio-Demographic and Economic Data for the Northeastern Nevada Regional Development Authority Area

This section presents general trends in a variety of socio-demographic and economic categories for the Northeastern Nevada Regional Development Authority's area, including changes in total population, total number of households, median household income, median family income, per capita (mean) income, the size of the civilian workforce, and changes in the civilian unemployment rate for Elko County, Eureka County, Humboldt County, Lander County, and White Pine County. When possible, comparisons between each individual county, the five-county region as a whole, the state of Nevada, and the United States is provided.

#### 2.1.a Total Population

Table 2.1 presents the change in total population for each county within the Northeastern Nevada Regional Development Authority area, for the region as a whole, for the state of Nevada, and for the United States between 2013 and 2017.

Between 2013 and 2017, the total residential population for the entire Northeastern Nevada region (including Elko County, Eureka County, Humboldt County, Lander County, and White Pine County) increased from an estimated 84,494 total individuals in 2013 to an estimated 86,938 total individuals in 2017, a net increase of 2,444 total individuals or 2.9 percent. Comparatively, the total population for the entire state of Nevada increased from an estimated

2.7 million total individuals in 2013 to an estimated 2.9 million total individuals in 2017, a net increase of approximately 157,659 total individuals or 5.8 percent. The total population for the entire United States increased from an estimated 311.5 million total individuals in 2013 to an estimated 321.0 million total individuals in 2017, a net increase of approximately 9.5 million total individuals or 3.0 percent.

<b>Table 2.1 – Total Population Communities within the Northeastern Nevada Regional Development Authority</b>				
<b>Community</b>	<b>2013</b>	<b>2017</b>	<b>2013-2017 Actual Change</b>	<b>2013-2017 Percent Change</b>
<b>Elko County</b>	50,023	52,377	2,354	4.7%
<b>Eureka County</b>	1,804	1,728	-76	-4.2%
<b>Humboldt County</b>	16,800	17,088	288	1.7%
<b>Lander County</b>	5,844	5,887	43	0.7%
<b>White Pine County</b>	10,023	9,858	-165	-1.6%
<b>Northeastern Nevada Region</b>	<b>84,494</b>	<b>86,938</b>	<b>2,444</b>	<b>2.9%</b>
<b>State of Nevada</b>	2,730,066	2,887,725	157,659	5.8%
<b>United States</b>	311,536,594	321,004,407	9,467,813	3.0%

*Source: U.S. Census Bureau; American Community Survey, 5-Year Estimates; 2013 and 2017*

Within the Northeastern Nevada region, Elko County saw the largest population growth between 2013 and 2017, increasing from an estimated 50,023 total individuals in 2013 to an estimated 52,377 total individuals in 2017, a net increase of 2,354 total individuals or 4.7 percent. Humboldt County had the second largest growth in total population between 2013 and 2017, increasing from an estimated 16,800 total individuals in 2013 to an estimated 17,088 total individuals in 2017, a net increase of 288 total individuals or 1.7 percent. In Lander County, the total population increased by just 43 total individuals, or by 0.7 percent, between 2013 and 2017, increasing from an estimated 5,844 total individuals in 2013 to an estimated 5,887 total individuals in 2017.

Both Eureka County and White Pine County experienced measurable declines in total population between 2013 and 2017. In Eureka County, the total population decreased from an estimated 1,804 total individuals in 2013 to an estimated 1,728 total individuals in 2017, a net decrease of 76 total individuals or -4.2 percent. In White Pine County, total population decreased from an estimated 10,023 total individuals in 2013 to an estimated 9,858 total individuals in 2017, a net decrease of 165 total individuals or -1.6 percent.

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### 2.1.b Total Number of Households

Table 2.2 presents the change in the total number of households for each county within the Northeastern Nevada Regional Development Authority area, for the region as a whole, for the state of Nevada, and for the United States between 2013 and 2017.

<b>Table 2.2 – Total Number of Households Communities within the Northeastern Nevada Regional Development Authority</b>				
<b>Community</b>	<b>2013</b>	<b>2017</b>	<b>2013-2017 Actual Change</b>	<b>2013-2017 Percent Change</b>
<b>Elko County</b>	17,599	17,882	283	1.6%
<b>Eureka County</b>	416	434	18	4.3%
<b>Humboldt County</b>	6,314	6,261	-53	-0.8%
<b>Lander County</b>	2,010	2,183	173	8.6%
<b>White Pine County</b>	3,357	3,343	-14	-0.4%
<b>Northeastern Nevada Region</b>	<b>29,696</b>	<b>30,103</b>	<b>407</b>	<b>1.4%</b>
<b>State of Nevada</b>	999,016	1,052,249	53,233	5.3%
<b>United States</b>	115,610,216	118,825,921	3,215,705	2.8%

*Source: U.S. Census Bureau; American Community Survey, 5-Year Estimates; 2013 and 2017*

Between 2013 and 2017, the total number of households for the entire Northeastern Nevada region increased from an estimated 29,696 total households in 2013 to an estimated 30,103 total households in 2017, a net increase of 407 total households or 1.4 percent. Across the entire state of Nevada, the total number of households increased from an estimated 999,016 total households in 2013 to an estimated 1.1 million total households in 2017, a net increase of 53,244 total households or 5.3 percent. Nationwide, the total number of households in the United States increased from an estimated 115.6 million total households in 2013 to an estimated 118.8 million total households in 2017, a net increase of approximately 3.2 million total households or 2.8 percent.

Within the Northeastern Nevada region, Elko County, Eureka County, and Lander County each saw growth in the total number of households within each county between 2013 and 2017. Between 2013 and 2017, the total number of households in Elko County increased from an estimated 17,599 total households in 2013 to an estimated 17,882 total household in 2017, a net increase of 283 total households or 1.6 percent. Between 2013 and 2017, the total number of households in Eureka County increased from an estimated 416 total households in 2013 to an estimated 434 total households in 2017, a net increase of 18 total households or 4.3 percent. In

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Lander County, the total number of households increased from an estimated 2,010 total households in 2013 to an estimated 2,183 total households in 2017, a net increase of 173 total households or 8.6 percent.

Between 2013 and 2017, the total number of households in both Humboldt County and White Pine County decreased. In Humboldt County, the total number of households decreased slightly, decreasing from an estimated 6,314 total households in 2013 to an estimated 6,261 total households in 2017, a net decrease of just 53 total households or -0.8 percent. In White Pine County, the total number of households also decreased slightly, decreasing from an estimated 3,357 total households in 2013 to an estimated 3,343 total households in 2017, a net decrease of just 14 total households or -0.4 percent.

### 2.1.c Median Household Income

Table 2.3 presents the change in median household income for each county within the Northeastern Nevada Regional Development Authority area, for the region as a whole, for the state of Nevada, and for the United States between 2013 and 2017.

<b>Table 2.3 – Median Household Income (2017 Inflation-Adjusted Dollars) Communities within the Northeastern Nevada Regional Development Authority</b>				
<b>Community</b>	<b>2013</b>	<b>2017</b>	<b>2013-2017 Actual Change</b>	<b>2013-2017 Percent Change</b>
<b>Elko County</b>	\$70,238	\$76,178	\$5,940	8.5%
<b>Eureka County</b>	\$64,632	\$67,159	\$2,527	3.9%
<b>Humboldt County</b>	\$59,472	\$69,324	\$9,852	16.6%
<b>Lander County</b>	\$72,742	\$79,865	\$7,123	9.8%
<b>White Pine County</b>	\$48,586	\$60,358	\$11,772	24.2%
<b>Northeastern Nevada Region (Average)</b>	<b>\$63,134</b>	<b>\$70,577</b>	<b>\$7,443</b>	<b>11.8%</b>
<b>State of Nevada</b>	\$52,800	\$55,434	\$2,634	5.0%
<b>United States</b>	\$53,046	\$57,652	\$4,606	8.7%

*Source: U.S. Census Bureau; American Community Survey, 5-Year Estimates; 2013 and 2017*

Between 2013 and 2017, the estimated median household income for the entire Northeastern Nevada region increased significantly, increasing from an estimated \$63,134 in 2013 to an estimated \$70,577 in 2017, a net increase of approximately \$7,443 or 11.8 percent. For the entire state of Nevada, median household income increased from \$52,800 in 2013 to \$55,434 in

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2017, a net increase of \$2,634 or 5.0 percent. Nationwide, median household income for the entire United States increased from \$53,046 in 2013 to \$57,652 in 2017, a net increase of \$4,606 or 8.7 percent.

Throughout the entire Northeastern Nevada region, median household income levels increased significantly for each of the five member counties. In Elko County, median household income increased from \$70,238 in 2013 to \$76,178 in 2017, a net increase of \$5,940 or 8.5 percent. In Eureka County, median household income increased from \$64,632 in 2013 to \$67,159 in 2017, a net increase of \$2,527 or 3.9 percent. In Humboldt County, median household income increased from \$59,472 in 2013 to \$69,324 in 2017, a net increase of \$9,852 or 16.6 percent. In Lander County, median household income increased from \$72,742 in 2013 to \$79,865 in 2017, a net increase of \$7,123 or 9.8 percent. In White Pine County, median household income increased from \$48,586 in 2013 to \$60,358 in 2017, a net increase of \$11,772 or 24.2 percent.

#### 2.1.d Median Family Income

Table 2.4 presents the change in median family income for each county within the Northeastern Nevada Regional Development Authority area, for the region as a whole, for the state of Nevada, and for the United States between 2013 and 2017.

<b>Table 2.4 – Median Family Income (2017 Inflation-Adjusted Dollars) Communities within the Northeastern Nevada Regional Development Authority</b>				
<b>Community</b>	<b>2013</b>	<b>2017</b>	<b>2013-2017 Actual Change</b>	<b>2013-2017 Percent Change</b>
<b>Elko County</b>	\$75,231	\$86,421	\$11,190	14.9%
<b>Eureka County</b>	\$94,648	\$109,085	\$14,437	15.3%
<b>Humboldt County</b>	\$74,433	\$80,884	\$6,451	8.7%
<b>Lander County</b>	\$75,857	\$96,250	\$20,393	26.9%
<b>White Pine County</b>	\$63,982	\$69,481	\$5,499	8.6%
<b>Northeastern Nevada Region (Average)</b>	<b>\$76,830</b>	<b>\$88,424</b>	<b>\$11,594</b>	<b>15.1%</b>
<b>State of Nevada</b>	\$61,359	\$65,469	\$4,110	6.7%
<b>United States</b>	\$64,719	\$70,850	\$6,131	9.5%

*Source: U.S. Census Bureau; American Community Survey, 5-Year Estimates; 2013 and 2017*

The estimated median family income for the entire Northeastern Nevada region increased from an estimated \$76,830 in 2013 to an estimated \$88,424 in 2017, a significant increase of

approximately \$11,594 or 15.1 percent. Comparatively, median family income for the entire state of Nevada increased from \$61,359 in 2013 to \$65,469 in 2017, a net increase of \$4,110 or 6.7 percent. Nationwide, median family income for the entire United States increased from \$64,719 in 2013 to \$70,850 in 2017, a net increase of \$6,131 or 9.5 percent.

Like median household income, median family income for each of the five counties within the Northeastern Nevada region increased between 2013 and 2017. In Elko County, median family income increased from \$75,231 in 2013 to \$86,421 in 2017, a net increase of \$11,190 or 14.9 percent. In Eureka County, median family income increased from \$94,648 in 2013 to \$109,085 in 2017, a net increase of \$14,437 or 15.3 percent. In Humboldt County, median family income increased from \$74,433 in 2013 to \$80,884 in 2017, a net increase of \$6,451 or 8.7 percent. In Lander County, median family income increased from \$75,857 in 2013 to \$96,250 in 2017, a net increase of \$20,393 or 26.9 percent. In White Pine County, median family income increased from \$63,982 in 2013 to \$69,481 in 2017, a net increase of \$5,499 or 8.6 percent.

#### 2.1.e Per Capita (Mean) Income

Table 2.5 presents the change in per capita (mean) income for each county within the Northeastern Nevada Regional Development Authority area, for the region as a whole, for the state of Nevada, and for the United States between 2013 and 2017.

<b>Table 2.5 – Per Capita (Mean) Income, Individuals (2017 Inflation-Adjusted Dollars) Communities within the Northeastern Nevada Regional Development Authority</b>				
<b>Community</b>	<b>2013</b>	<b>2017</b>	<b>2013-2017 Actual Change</b>	<b>2013-2017 Percent Change</b>
<b>Elko County</b>	\$28,358	\$32,498	\$4,140	14.6%
<b>Eureka County</b>	\$28,056	\$35,606	\$7,550	26.9%
<b>Humboldt County</b>	\$26,515	\$29,215	\$2,700	10.2%
<b>Lander County</b>	\$29,800	\$30,256	\$456	1.5%
<b>White Pine County</b>	\$24,435	\$25,350	\$915	3.7%
<b>Northeastern Nevada Region (Average)</b>	<b>\$27,433</b>	<b>\$30,585</b>	<b>\$3,152</b>	<b>11.5%</b>
<b>State of Nevada</b>	\$26,589	\$28,450	\$1,861	7.0%
<b>United States</b>	\$28,155	\$31,177	\$3,022	10.7%

*Source: U.S. Census Bureau; American Community Survey, 5-Year Estimates; 2013 and 2017*

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Like median household income and median family income, per capita income for the entire Northeastern Nevada region increased between 2013 and 2017, increasing from an estimated \$27,433 in 2013 to an estimated \$30,585 in 2017, a net increase of approximately \$3,152 or 11.5 percent. Statewide, per capita income for the entire state of Nevada increased from \$26,589 in 2013 to \$28,450 in 2017, a net increase of \$1,861 or 7.0 percent. Nationwide, per capita income for the entire United States increased from \$28,155 in 2013 to \$31,177 in 2017, a net increase of \$3,022 or 10.7 percent.

Per capita income for each of the five counties within the Northeastern Nevada region also increased between 2013 and 2017. In Elko County, per capita income increased from \$28,358 in 2013 to \$32,498 in 2017, a significant net increase of \$4,140 or 14.6 percent. In Eureka County, per capita income increased from \$28,056 in 2013 to \$35,606 in 2017, a significant increase of \$7,550 or 26.9 percent. In Humboldt County, per capita income increased from \$26,515 in 2013 to \$29,215 in 2017, a significant net increase of \$2,700 or 10.2 percent. In Lander County, per capita income increased from \$29,800 in 2013 to \$30,256 in 2017, a marginal increase of \$456 or 1.5 percent. In White Pine County, per capita income increased from \$24,435 in 2013 to \$25,350 in 2017, a net increase of \$915 or 3.7 percent.

#### 2.1.f Civilian Workforce (Individuals 16 Years or Older)

Table 2.6 presents the change in the relative size of the civilian workforce (individuals living in the community that are 16 years of age or older) for each county within the Northeastern Nevada Regional Development Authority area, for the region as a whole, for the state of Nevada, and for the United States between 2013 and 2017.

Between 2013 and 2017, the total civilian workforce living throughout the entire Northeastern Nevada region increased by 2,324 total individuals or 3.6 percent, increasing from 63,925 total individuals in 2013 to 66,249 total individuals in 2017. Statewide, the total civilian workforce living throughout the entire state of Nevada increased from approximately 2.1 million total individuals in 2013 to approximately 2.3 million total individuals in 2017, a net increase of 148,945 total individuals or 6.9 percent. Nationwide, the total civilian workforce for the entire United States increased from approximately 246.2 million total individuals in 2013 to approximately 255.8 million total individuals in 2017, a net increase of approximately 9.6 million total individuals or 3.9 percent.

Except for White Pine County, the civilian workforce for each individual county within the Northeastern Nevada region increased between 2013 and 2017. In Elko County, the civilian workforce living throughout the county increased from 37,364 total individuals in 2013 to 39,478 total individuals in 2017, a net increase of 2,114 total individuals or 5.7 percent. In Eureka County, the civilian workforce living throughout the county increased from 1,339 total individuals in 2013 to 1,393 total individuals in 2017, a marginal increase of 54 total individuals or 4.8 percent. In Humboldt County, the civilian workforce living throughout the county increased from 12,697 total individuals in 2013 to 12,924 total individuals in 2017, a net increase of just 227 total individuals or 1.8 percent. In Lander County, the civilian workforce living throughout the county increased from 4,397 total individuals in 2013 to 4,422 total individuals in 2017, a marginal increase of just 25 total individuals or 0.6 percent.

<b>Table 2.6 – Civilian Workforce (Individuals 16 Years or Older) Communities within the Northeastern Nevada Regional Development Authority</b>				
<b>Community</b>	<b>2013</b>	<b>2017</b>	<b>2013-2017 Actual Change</b>	<b>2013-2017 Percent Change</b>
<b>Elko County</b>	37,364	39,478	2,114	5.7%
<b>Eureka County</b>	1,339	1,393	54	4.0%
<b>Humboldt County</b>	12,697	12,924	227	1.8%
<b>Lander County</b>	4,397	4,422	25	0.6%
<b>White Pine County</b>	8,128	8,032	-96	-1.2%
<b>Northeastern Nevada Region</b>	<b>63,925</b>	<b>66,249</b>	<b>2,324</b>	<b>3.6%</b>
<b>State of Nevada</b>	2,143,541	2,292,486	148,945	6.9%
<b>United States</b>	246,191,954	255,797,692	9,605,738	3.9%

*Source: U.S. Census Bureau; American Community Survey, 5-Year Estimates; 2013 and 2017*

In White Pine County, the only county to see a net decline in the existing civilian workforce between 2013 and 2017, the total civilian workforce decreased marginally by 96 total individuals or by -1.2 percent. Between 2013 and 2017, the total civilian workforce living throughout White Pine County decreased from 8,128 total individuals in 2013 to 8,032 total individuals in 2017.

#### 2.1.g Civilian Unemployment Rate (Individuals 16 Years or Older)

Table 2.7 presents the change in the civilian unemployment rate (for individuals living in the community that are 16 years of age or older) for each county within the Northeastern Nevada Regional Development Authority area, for the region as a whole, for the state of Nevada, and for the United States between 2013 and 2017. Note that the civilian unemployment rate for Eureka County for 2017 was not available at the time of publication of this University Center for Economic Development technical report.

Between 2013 and 2017, the estimated civilian unemployment rate for the entire Northeastern Nevada region decreased significantly, decreasing from an estimated 8.3 percent in 2013 to an estimated 6.4 percent in 2017, a net decrease of 1.9 percent or 22.8 percent. Statewide, the civilian unemployment rate for the entire state of Nevada decreased significantly, decreasing from 12.5 percent in 2013 to 8.0 percent in 2017, a dramatic net decrease of 4.5 percent or percentage decrease of -36.0 percent. Nationwide, the civilian unemployment rate for the entire United States decreased significantly as well, decreasing from 9.7 percent in 2013 to 6.6 percent in 2017, a substantial net decrease of 3.1 percent or -32.0 percent.



<b>Table 2.7 – Civilian Unemployment Rate (Individuals 16 Years or Older) Communities within the Northeastern Nevada Regional Development Authority</b>				
<b>Community</b>	<b>2013</b>	<b>2017</b>	<b>2013-2017 Actual Change</b>	<b>2013-2017 Percent Change</b>
<b>Elko County</b>	5.7%	4.4%	-1.3%	-22.8%
<b>Eureka County</b>	5.4%	-	-	-
<b>Humboldt County</b>	9.1%	7.3%	-1.8%	-19.8%
<b>Lander County</b>	11.2%	7.6%	-3.6%	-32.1%
<b>White Pine County</b>	9.9%	6.2%	-3.7%	-37.4%
<b>Northeastern Nevada Region (Average)</b>	<b>8.3%</b>	<b>6.4%</b>	<b>-1.9%</b>	<b>-22.8%</b>
<b>State of Nevada</b>	12.5%	8.0%	-4.5%	-36.0%
<b>United States</b>	9.7%	6.6%	-3.1%	-32.0%

*Source: U.S. Census Bureau; American Community Survey, 5-Year Estimates; 2013 and 2017*

The civilian unemployment rate for each county within the Northeastern Nevada region, that data was available for, decreased significantly between 2013 and 2017. In Elko County, the civilian unemployment rate decreased from 5.7 percent in 2013 to 4.4 percent in 2017, a net decrease of 1.3 percent or -22.8 percent overall. The civilian unemployment rate for Eureka County in 2013 was 5.4 percent and, given the trend in the civilian unemployment rate for the entire Northeastern Nevada region, it is likely that the civilian unemployment rate of Eureka County also declined between 2013 and 2017.

In Humboldt County, the civilian unemployment rate decreased from 9.1 percent in 2013 to 7.3 percent in 2017, a net decrease of 1.8 percent or -19.8 percent overall. In Lander County, the civilian unemployment rate decreased from 11.2 percent in 2013 to 7.6 percent in 2017, a net decrease of 3.6 percent or -32.1 percent overall. In White Pine County, the civilian unemployment rate decreased from 9.9 percent in 2013 to 6.2 percent in 2017, a net decrease of 3.7 percent or -37.4 percent overall.

## **2.2 Industry and Occupation Sector Data for the Northeastern Nevada Regional Development Authority Area**

Table 2.8 presents the ten largest industry sectors for the five-county Northeastern Nevada Regional Development Authority area measured by the total number of jobs the industry sector,

as a whole, generated in 2018. The total number of jobs generated by each individual industry sector for 2013 and 2018 is presented along with the location quotient and the industry sector's contribution to Gross Regional Product for 2018. Similar data for the Administrative and Support and Waste Management and Remediation Services industry sector is highlighted for comparison.

<b>Table 2.8 – Top Ten Industry Sectors for the Northeastern Nevada Regional Development Authority Area 2013 and 2018</b>						
<b>Industry Sector</b>	<b>Total Jobs 2013</b>	<b>Total Jobs 2018</b>	<b>Change in Total Jobs</b>	<b>Percent Change in Total Jobs</b>	<b>Location Quotient 2018</b>	<b>Gross Regional Product 2018</b>
Mining, Quarrying, and Oil and Gas	12,267	11,498	-769	-6.0%	61.97	\$3.86 Billion
Government	7,606	7,713	107	1.0%	1.15	\$685.97 Million
Accommodation and Food Services	7,278	6,792	-486	-7.0%	1.77	\$370.68 Million
Retail Trade	4,100	4,070	-30	-1.0%	0.90	\$273.44 Million
Construction	2,687	2,291	-396	-15.0%	0.92	\$203.43 Million
Health Care and Social Assistance	1,967	2,151	184	9.0%	0.38	\$133.41 Million
Wholesale Trade	1,394	1,466	72	5.0%	0.89	\$621.18 Million
Other Services (Except Public Administration)	1,415	1,370	-45	-3.0%	0.64	\$84.83 Million
Transportation and Warehousing	1,207	1,191	-16	-1.0%	0.74	\$101.17 Million
Agriculture, Forestry, Fishing and Hunting	1,119	1,170	51	5.0%	2.22	\$118.28 Million
<b>Admin. and Support and Waste Mgt. and Remediation</b>	<b>1,168</b>	<b>949</b>	<b>-219</b>	<b>-19.0%</b>	<b>0.34</b>	<b>\$57.62 Million</b>
<b>Total, Northeastern Nevada Area</b>	<b>42,208</b>	<b>40,661</b>	<b>-1,547</b>	<b>-4.0%</b>	<b>-</b>	<b>\$6.51 Billion</b>

*Source: Nevada Governor's Office of Economic Development, Northeastern Nevada Regional Development Authority Aggregate Report, Emsi Q2 2019 Data Set*

Between 2013 and 2018, the total number of jobs created and provided by the ten largest industry sectors within the Northeastern Nevada area plus the total number of jobs created and provided within the Administrative and Support and Waste Management and Remediation Services industry sector decreased from an estimated 42,208 total jobs in 2013 to an estimated 40,661 total jobs in 2018, a net decrease of 1,547 or -4.0 percent. The total contribution to Gross Regional Product (the total amount of economic output generated by all industry sectors within the Northeastern Nevada area) by these 11 industry sectors in 2018 was an estimated \$6.51 billion.

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In 2018, the Administrative and Support and Waste Management and Remediation industry sector generated an estimated 949 total jobs, a net decrease of 219 total jobs or -19.0 percent from the 1,168 total jobs generated within this industry sector in 2013. This accounted for just 2.3 percent of the 40,661 total jobs generated by the 11 industry sectors listed in Table 2.8. The Administrative and Support and Waste Management and Remediation industry sector generated an estimated total of approximately \$57.62 million in economic output in 2018, accounting for just 0.9 percent of the five-county Northeastern Nevada area's Gross Regional Product for the 11 industry sectors listed in Table 2.8 of approximately \$6.51 billion.

Comparatively, the five-county area's largest industry sector, the Mining, Quarrying, and Oil and Gas Extraction industry sector, generated an estimated 11,498 total jobs in 2018, a net decrease of 769 total jobs or -6.0 percent from the 12,267 total jobs generated by this industry sector in 2013. This accounted for approximately 28.3 percent of the 40,661 total jobs generated by the 11 industry sectors listed in Table 2.8. The Mining, Quarrying, and Oil and Gas Extraction industry sector generated an estimated total of approximately \$3.86 billion in economic output in 2018, accounting for 59.3 percent of the five-county Northeastern Nevada area's Gross Regional Product for the 11 industry sectors listed in Table 2.. In-terms of total jobs generated and total economic output, the Mining, Quarry, and Oil and Gas Extraction industry sector was the single largest industry sector within the five-county Northeastern Nevada area in 2018.

A location quotient greater than 1.0 indicates that the industry sector in the local geographic area is a *net exporter*, in that the total production and output of all firms within the industry sector in the geographic area produces more goods and services than can be consumed locally. Surplus goods and services are *exported* out of the local geographic area and cash is imported into the local geographic area. A location quotient less than 1.0 indicates that the industry sector in the local geographic area is a *net importer*, in that total production and output of all firms within the industry sector in the geographic area does not produce enough goods and services to satisfy local consumption meaning that goods and services have to *imported* into the local geographic area and, subsequently, cash is exported out of the local geographic area.

In 2018, the location quotient for the Mining, Quarrying, and Oil and Gas Extraction industry sector was 61.97, indicating that the Mining, Quarrying, and Oil and Gas Extraction industry sector was a significant *net exporter* of goods and services. Of the 11 industry sectors listed in Table 2.8, this industry sector had the single largest location quotient in 2018. The Agriculture, Forestry, Fishing and Hunting industry had the second largest location quotient, 2.22, in 2018 and the Accommodation and Food Services industry sector had the third largest location quotient, 1.77, in 2018. While these three industry sectors *export* a significant portion of their products and services and generate *positive cash flows* into the five-county Northeastern Nevada area, the Administrative and Support and Waste Management and Remediation Services industry sector was a *net importer* in 2018 with a location quotient of just 0.34. The location quotient of 0.34 for the Administrative and Support and Waste Management and Remediation Services industry sector suggests that, in 2018, waste products generated within the five-county area had to be shipped to processing, recycling and/or waste storage facilities outside the Northeastern Nevada area thereby creating a *negative cash flow* of dollars moving outside the area to cover the processing, recycling and/or waste storage service costs. In order to reverse this negative cash flow within the Administrative and Support and Waste Management and Remediation

Services industry sector, the area will have to develop processing, recycling and/or waste storage facilities capable of managing and using waste products generated within the five-county Northeastern Nevada area.

Table 2.9 presents the ten largest occupation sectors for the five-county Northeastern Nevada Regional Development Authority area measured by the total number of people employed by the occupation sector in 2018. The total number of people employed within each occupation sector for 2013 and 2018 is presented along with the location quotient and the 2017 median hourly earning per worker for each individual occupation sector. There is no directly comparable occupation sector for the Administrative and Support and Waste Management and Remediation Services industry sector for the existing occupational sectors within the Northeastern Nevada Regional Development Authority area. Comparable and analogue occupation sectors are, however, highlighted for the Mining, Quarrying, and Oil and Gas Extraction industry sector.

<b>Table 2.9 – Top Ten Occupation Sectors for the Northeastern Nevada Regional Development Authority Area 2013 and 2018</b>						
<b>Industry Sector</b>	<b>Total Jobs 2013</b>	<b>Total Jobs 2018</b>	<b>Change in Total Jobs</b>	<b>Percent Change in Total Jobs</b>	<b>Location Quotient 2018</b>	<b>Median Hourly Earning 2018</b>
Construction and Extraction	6,796	6,223	-573	-8.0%	3.04	\$27.38
Office and Administrative Services	4,835	4,576	-259	-5.0%	0.70	\$16.21
Installation, Maintenance, and Repair	4,666	4,563	-103	-2.0%	2.61	\$28.86
Transportation and Material Moving	3,949	3,909	-40	-1.0%	1.28	\$23.07
Food Preparation and Serving Related	4,288	3,884	-404	-9.0%	1.04	\$9.78
Sales and Related	3,521	3,483	-38	-1.0%	0.79	\$11.74
Management	2,368	2,347	-21	-1.0%	0.93	\$33.92
Education, Training, and Library	1,831	2,017	186	10.0%	0.79	\$22.52
Production	2,103	2,007	-96	-5.0%	0.77	\$25.04
Building and Grounds Cleaning and Maintenance	2,100	1,940	-160	-8.0%	1.18	\$25.04
<b>Total, Northeastern Nevada Area</b>	<b>36,457</b>	<b>34,949</b>	<b>-1,508</b>	<b>-4.0%</b>	<b>-</b>	<b>\$22.36 (Average)</b>

*Source: Nevada Governor's Office of Economic Development, Northeastern Nevada Regional Development Authority Aggregate Report, Emsi Q2 2019 Data Set*

The comparable occupation sectors to the Mining, Quarrying, and Oil and Gas industry sector for the Northeastern Nevada area are the Construction and Extraction occupation sector and Transportation and Material Moving occupation sector. Between 2013 and 2018, the total number of people employed across the top ten occupation sectors listed in Table 2.9 for the

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Northeastern Nevada area decreased from an estimated 36,457 total people employed in 2013 to an estimated 34,949 total people employed in 2018, a net decrease of 1,508 total people employed or -4.0 percent. In 2017, the average median wage paid to workers within the largest ten occupation sectors listed in Table 2.9 was \$22.36 per worker. Comparatively, the highest median hourly wage paid in 2017 was \$33.92 in the Management occupation sector and the lowest median hourly wage paid in 2017 was \$9.78 in the Food Preparation and Serving Related occupation sector.

Between 2013 and 2018, the total number of people employed in the Construction and Extraction occupation sector decreased from an estimated 6,796 total people employed in 2013 to an estimated 6,223 total people employed in 2018, a significant net decrease of 573 total people employed or -8.0 percent. The median hourly earning paid to individual employees in 2017 in the Construction and Extraction occupation sector was \$27.38 and the location quotient for this occupation sector in 2018 was 3.04, indicating that the Construction and Extraction occupation sector was a *net exporter* and generated positive cash flows of financial resources into the five-county Northeastern Nevada area. In-terms of total employment in 2018, the Construction and Extraction occupation sector was the single largest occupation sector in the Northeastern Nevada area, paid the third highest median hourly wage in 2017, and had the single largest location quotient in 2018 among the top ten occupation sectors within the Northeastern Nevada area.

Between 2013 and 2018, the total number of people employed in the Transportation and Material Moving occupation sector decreased from an estimated 3,949 total people employed in 2013 to an estimated 3,909 total people employed in 2018, a net decrease of just 40 total people employed or -1.0 percent. The median hourly earning paid to individual employees in 2017 in the Transportation and Material Moving occupation sector was \$23.07 and the location quotient for this occupation sector in 2018 was 1.28, indicating that the Transportation and Material Moving occupation sector was a *net exporter* and generated positive cash flows of financial resources into the five-county Northeastern Nevada area. In-terms of total employment in 2018, the Transportation and Material Moving occupation sector was the fourth largest occupation sector in the Northeastern Nevada area, paid the fifth highest median hourly wage in 2017, and had the third largest location quotient in 2018 among the top ten occupation sectors within the Northeastern Nevada area.

Combined, the total number of people employed in the Construction and Extraction occupation sector and the Transportation and Material Moving occupation sector decreased from an estimated 10,745 total people employed in 2013 to an estimated 10,132 total people employed in 2018, a net decrease of 613 total people employed or -5.7 percent. In 2018, the total number of people employed in the Construction and Extraction occupation sector and the Transportation and Material Moving occupation sector combined accounted for 29.0 percent of the 34,949 total people employed and working in all ten of the occupation sectors listed in Table 2.9. As the closest comparable and analogue occupation sectors to the Mining, Quarrying, and Oil and Gas Extraction industry sector, the Construction and Extraction occupation sector and the Transportation and Material Moving occupation sector both account for a significant portion of total employment within the five-county Northeastern Nevada area and are collectively responsible for a significant portion of the area's overall economic base as is the Mining, Quarrying, and Oil and Gas Extraction industry sector examined previously in Table 2.8.

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## 2.3 Waste Levels for the Northeastern Nevada Regional Development Authority Area

This sub-section presents a general estimation of potential recyclable waste generated by mines operating within the Northeastern Nevada Regional Development Authority as well as a general estimation of the total amount of waste collected by landfills operating within the Northeastern Nevada Regional Development Authority area. Because the single largest industry sector within the Northeastern Nevada Regional Development Authority area is the Mining, Quarrying, and Oil and Gas Extraction industry sector, and by proxy the Construction and Extraction occupation sector and the Transportation and Material Moving occupation sector, it is assumed that the Mining, Quarry, and Oil and Gas Extraction industry sector would be the single largest *single point source* of commercial and industrial wastes generated within the five-county Northeastern Nevada area. Non-single point sources of municipal solid waste, largely generated by residential properties and individual residents, likely remain the single largest total source of overall waste materials being disposed of in area landfills located within the five-county Northeastern Nevada area.

### 2.3.a Potential Recyclable Waste Generated by Mines Operating within the Northeastern Nevada Regional Development Authority Area

Nevada Gold Mines is a joint venture between Barrick Gold Corporation and the Newmont Corporation operating within the state of Nevada that operates seven separate mining operations in the five-county Northeastern Nevada area including Long Canyon, the Carlin Complex (Barrick Legacy), the Carlin Complex (Newmont Legacy), Cortez, Phoenix, TC, and TR. Using recyclable waste data provided by Nevada Gold Mines, Table 2.10 presents the combined total amount of recyclable waste for all of Nevada Gold Mines' seven sites operating within the Northeastern Nevada area for 2018. Appendix A of this University Center for Economic Development technical report presents the total amount of waste produced for each of Nevada Gold Mines' seven operating sites in Northeastern Nevada.

In 2018, Nevada Gold Mines' seven individual operating mine sites within the five-county Northeastern Nevada area generated approximately 41,981.60 metric tonnes of potentially recyclable waste. Metal was the single largest type of recyclable waste, generating an estimated 35,191.67 metric tonnes of waste and accounting for approximately 83.8 percent of all waste measured in metric tonnes generated by Nevada Gold Mines' seven individual operating mine sites within the Northeastern Nevada area. Paper was the second largest type of recyclable waste in 2018, generating an estimated 2,771.45 metric tonnes of waste and accounting for approximately 6.6 percent of all waste measured in metric tonnes generated by Nevada Gold Mines. Plastic was the third largest type of recyclable waste in 2018, generating an estimated 1,847.10 metric tonnes of waste and Cardboard was the fourth largest type of recyclable waste in 2018, generating an estimated 1,847.10 metric tonnes of waste. Both Plastic and Cardboard accounted for approximately 4.4 percent of all waste measured in metric tonnes generated by Nevada Gold Mines' various mine sites operating within the Northeastern Nevada area.

<b>Table 2.10 – Recyclable Waste Types and Amounts Produced Nevada Gold Mines – Long Canyon, Carlin Complex (Barrick Legacy), Carlin Complex (Newmont Legacy), Cortez, Phoenix, TC, and TR Combined 2018</b>	
<b>Recyclable Waste Type</b>	<b>Amount Produced (in Number of Units, Kilograms, Cubic Meters or Metric Tons/Tonnes)</b>
Plastic	1,847.23 (Metric Tonnes)
Paper	2,771.45 (Metric Tonnes)
Pallets	8.26 (Metric Tonnes)
Cardboard (Onsite)	1,847.10 (Metric Tonnes)
Cardboard (Offsite)	52.83 (Metric Tonnes)
HDPE Pipe/Liner	112.72 (Metric Tonnes)
Used Oil	4,352.48 (Cubic Meters)
Used Antifreeze	186.04 (Cubic Meters)
Batteries (Lithium)	0.18 (Metric Tonnes)
Batteries (Lead)	4.35 (Metric Tonnes)
Batteries (Alkaline)	-
Batteries	67.49 (Metric Tonnes)
Electronics	20.44 (Metric Tonnes)
Lamps/Bulbs	0.882 (Metric Tonnes)
Ink Cartridges	234.00 (Number of Units)
Ink Cartridges	-
Food Waste	54.15 (Metric Tonnes)
Tires – Large (Onsite)	1,663.00 (Number of Units)
Tires – Large	1,000.00 (Number of Units)
Tires – LV	4,102.07 (Number of Units)
Tires – LV	3,206.37 (Number of Units)
Metal	35,191.67 (Metric Tonnes)
Totes/Containers	2.75 (Metric Tonnes)
Aluminum Cans	0.10 (Metric Tonnes)
<b>TOTAL (of Just Metric Tonnes)</b>	<b>41,981.60 (Metric Tones)</b>

Source: Nevada Gold Mines, 2019

Other notable types of potentially recyclable materials generated by Nevada Gold Mines’ seven individual operating mine sites within the Northeastern Nevada area combined in 2018 included 4,102.07 total units of Tires-LV and an additional 3,206.37 total units of Tires-LV. An additional 1,663.00 total units of Tires – Large (Onsite) and an additional 1,000.00 total units of Tires – Large were also generated from operations managed by Nevada Gold Mines in Northeastern Nevada in 2018. A total of 4,352.48 cubic meters of Used Oil and 186.04 total cubic meters of Used Antifreeze were also generated by Nevada Gold Mines’ seven individual operating mine sites within the Northeastern Nevada area combined in 2018.

### 2.3.b Generation of Waste Collected by Landfills Operating within the Northeastern Nevada Regional Development Authority Area

Table 2.11 presents the total amount of both municipal solid waste (MSW) and industrial waste collected by landfills operating within each of the five counties within the Northeastern Nevada area for each year between 2013 and 2018 measured in metric tonnes.

<b>Table 2.11 – Total Municipal Solid Waste (MSW) and Industrial Waste Collected by Landfills within the Northeastern Nevada Regional Development Authority Area In Metric Tonnes, 2013 through 2018</b>								
<b>Jurisdiction and Type</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2013-2018 Total Change</b>	<b>2013- 2018 Percent Change</b>
Humboldt Industrial	119,612.75	125,237.14	105,474.28	93,760.81	155,063.41	90,293.26	-29,319.49	-24.5%
Humboldt MSW	19,177.15	19,207.66	19,792.73	19,308.25	26,753.15	24,465.50	5,288.35	27.6%
<b>Humboldt Total</b>	<b>138,789.90</b>	<b>144,444.81</b>	<b>125,267.01</b>	<b>113,069.06</b>	<b>181,816.56</b>	<b>114,758.76</b>	<b>-24,031.14</b>	<b>-17.3%</b>
Elko Industrial	13,364.25	8,555.47	16,319.38	16,959.81	16,198.60	18,476.81	5,112.56	38.3%
Elko MSW	60,248.36	58,714.28	47,319.82	48,267.83	49,248.19	51,565.59	-8,682.77	-14.4%
<b>Elko Total</b>	<b>73,612.61</b>	<b>67,269.75</b>	<b>63,639.20</b>	<b>65,227.64</b>	<b>65,446.78</b>	<b>70,042.40</b>	<b>-3,570.21</b>	<b>-4.8%</b>
Eureka Industrial	7,427.62	10,286.12	3,595.99	6,833.87	7,566.88	11,124.13	3,696.51	49.8%
Eureka MSW	1,005.32	1,080.06	988.09	983.25	861.58	657.85	-347.48	-34.6%
<b>Eureka Total</b>	<b>8,432.95</b>	<b>11,366.18</b>	<b>4,584.08</b>	<b>7,817.12</b>	<b>8,428.46</b>	<b>11,781.97</b>	<b>3,349.03</b>	<b>39.7%</b>
Lander Industrial	20,660.63	19,559.62	24,468.23	20,831.30	101,291.80	31,086.10	10,425.47	50.5%
Lander MSW	1,847.12	1,712.27	1,640.42	1,765.06	2,124.45	2,218.61	371.49	20.1%
<b>Lander Total</b>	<b>22,507.75</b>	<b>21,271.88</b>	<b>26,108.65</b>	<b>22,596.36</b>	<b>103,416.25</b>	<b>33,304.71</b>	<b>10,796.96</b>	<b>48.0%</b>
White Pine Industrial	6,142.93	6,750.29	6,010.81	5,424.01	6,116.39	6,779.92	636.99	10.4%
White Pine MSW	7,001.16	7,088.97	7,048.76	6,876.83	6,744.63	6,464.42	-536.75	-7.7%
<b>White Pine Total</b>	<b>13,144.09</b>	<b>13,839.26</b>	<b>13,059.57</b>	<b>12,300.84</b>	<b>12,861.02</b>	<b>13,244.34</b>	<b>100.24</b>	<b>0.8%</b>
NNRDA Industrial	167,208.18	170,388.64	155,868.69	143,809.80	286,237.07	157,760.22	-9,447.97	-5.7%
NNRDA MSW	89,279.11	87,803.24	76,789.82	77,201.23	85,731.99	85,371.97	-3,907.15	-4.4%
<b>NNRDA Total</b>	<b>256,487.30</b>	<b>258,191.88</b>	<b>232,658.51</b>	<b>221,011.02</b>	<b>371,969.06</b>	<b>243,132.18</b>	<b>-13,355.11</b>	<b>-5.2%</b>

Source: Nevada Division of Environmental Protection, Bureau of Waste Management



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Note that the estimations of waste collected by landfills operating within the Northeastern Nevada Regional Development Authority area presented in Table 2.11 do not provide any information regarding the *source* of the waste produced. It is possible that municipal solid waste and commercial and industrial waste being generated from locations outside the five-county Northeastern Nevada area are being disposed of in landfills operating within the five-county Northeastern Nevada area. The estimations provided here only illustrate how much total waste, including both municipal solid waste and commercial and industrial waste, has been and is currently making its way into landfills operating within the five-county Northeastern Nevada area regardless of the waste's geographic source location.

For the entire five-county Northeastern Nevada area, the total amount of industrial waste and municipal solid waste collected by area landfills combined decreased from an estimated 256,487.30 metric tonnes of total waste collected in 2013 to an estimated 243,132.18 metric tonnes of total waste collected in 2018, a net decrease of 13,355.11 metric tonnes or -5.2 percent. The amount of just industrial waste collected by area landfills decreased from an estimated 167,208.18 metric tonnes of total waste collected in 2013 to an estimated 157,760.22 metric tonnes of total waste collected in 2018, a net decrease of 9,447.97 metric tonnes or -5.7 percent. The amount of just municipal solid waste collected by area landfills decreased from an estimated 89,279.11 metric tonnes of total waste collected in 2013 to an estimated 85,371.97 metric tonnes of total waste collected in 2018, a net decrease of 3,907.15 metric tonnes or -4.4 percent. For the entire five-county Northeastern Nevada area, industrial waste represented a significant majority of total waste collected by area landfills. Between 2013 and 2018, 67.5 percent, on average per year, of all waste entering Northeastern Nevada area landfills was industrial waste and just 32.5 percent, on average per year, of all waste entering Northeastern Nevada area landfills was municipal solid waste.

In Humboldt County, the total amount of industrial waste and municipal solid waste collected by landfills operating within Humboldt County decreased from 138,789.90 metric tonnes of total waste collected in 2013 to 114,758.76 metric tonnes of total waste collected in 2018, a net decrease of 24,031.14 metric tonnes or -17.3 percent. The amount of just industrial waste collected by landfills operating within Humboldt County decreased from 119,612.75 metric tonnes of total waste collected in 2013 to 90,293.26 metric tonnes of total waste collected in 2018, a net decrease of 29,319.49 metric tonnes or -24.5 percent. The amount of just municipal solid waste collected by landfills operating within Humboldt County increased from 19,177.15 metric tonnes of total waste collected in 2013 to an estimated 24,465.50 metric tonnes of total waste collected in 2018, a net increase of 5,288.35 metric tonnes or 27.6 percent. For just Humboldt County, industrial waste represented a significant majority of total waste collected by landfills operating within Humboldt County. Between 2013 and 2018, 84.0 percent, on average per year, of all waste entering Humboldt County landfills was industrial waste and just 16.0 percent, on average per year, of all waste entering Humboldt County landfills was municipal solid waste.

In Elko County, the total amount of industrial waste and municipal solid waste collected by landfills operating within Elko County decreased from an estimated 73,612.61 metric tonnes of total waste collected in 2013 to an estimated 70,042.40 metric tonnes of total waste collected in

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2018, a net decrease of 3,570.21 metric tonnes or -4.8 percent. The amount of just industrial waste collected by landfills operating within Elko County increased from an estimated 13,364.25 metric tonnes of total waste in 2013 to an estimated 18,476.81 metric tonnes of total waste in 2018, a net increase of 5,112.56 metric tonnes or 38.3 percent. The amount of just municipal solid waste collected by landfills operating within Elko County decreased from an estimated 60,248.36 metric tonnes of total waste in 2013 to an estimated 51,565.59 metric tonnes of total waste in 2018, a net decrease of 8,682.77 metric tonnes or -14.4 percent. For just Elko County, municipal solid waste represented a significant majority of total waste collected by landfills operating within Elko County. Between 2013 and 2018, 77.7 percent, on average per year, of all waste entering Elko County landfills was municipal solid waste and just 22.3 percent, on average per year, of all waste entering Elko County landfills was industrial waste.

In Eureka County, the total amount of industrial waste and municipal solid waste collected by landfills operating within Eureka County increased from an estimated 8,432.95 metric tonnes of total waste collected in 2013 to an estimated 11,781.97 metric tonnes of total waste collected in 2018, a net increase of 3,349.03 metric tonnes or 39.7 percent. The amount of just industrial waste collected by landfills operating within Eureka County increased from an estimated 7,472.62 metric tonnes of total waste in 2013 to an estimated 11,124.13 metric tonnes of total waste in 2018, a net increase of 3,696.51 metric tonnes or 49.8 percent. The amount of just municipal solid waste collected by landfills operating within Eureka County decreased from an estimated 1,005.32 metric tonnes of total waste in 2013 to an estimated 657.85 metric tonnes of total waste in 2018, a net decrease of 347.48 metric tonnes or -34.6 percent. For just Eureka County, industrial waste represented a significant majority of total waste collected by landfills operating within Eureka County. Between 2013 and 2018, 88.1 percent, on average per year, of all waste entering Eureka County landfills was industrial waste and just 11.9 percent, on average per year, of all waste entering Eureka County landfills was municipal solid waste.

In Lander County, the total amount of industrial waste and municipal solid waste collected by landfills operating within Lander County increased from an estimated 22,507.75 metric tonnes of total waste collected in 2013 to an estimated 33,304.71 metric tonnes of total waste collected in 2018, a net increase of 10,796.96 metric tonnes or 48.0 percent. The amount of just industrial waste collected by landfills operating within Lander County increased from an estimated 20,660.63 metric tonnes of total waste in 2013 to an estimated 31,086.10 metric tonnes of total waste in 2018, a net increase of 10,425.47 total metric tonnes or 50.5 percent. The amount of just municipal solid waste collected by landfills operating within Lander County increased from an estimated 1,874.12 metric tonnes of total waste in 2013 to an estimated 2,218.61 metric tonnes of total waste in 2018, a net increase of 371.49 metric tonnes or 20.1 percent. For just Lander County, industrial waste represented a significant majority of total waste collected by landfills operating within Lander County. Between 2013 and 2018, 93.5 percent, on average per year, of all waste entering Lander County landfills was industrial waste and just 6.5 percent, on average per year, of all waste entering Lander County landfills was municipal solid waste.

In White Pine County, the total amount of industrial waste and municipal waste collected by landfills operating within White Pine County increased from an estimated 13,144.09 metric tonnes of total waste in 2013 to an estimated 13,244.34 metric tonnes of total waste, a slight increase of just 100.24 metric tonnes or 0.8 percent. The amount of just industrial waste

collected by landfills operating within White Pine County increased from an estimated 6,412.93 metric tonnes of total waste in 2013 to an estimated 6,779.92 metric tonnes of total waste in 2018, a net increase of 636.99 metric tonnes or 10.4 percent. The amount of just municipal solid waste collected by landfills operating within White Pine County decreased from an estimated 7,001.16 metric tonnes of total waste in 2013 to an estimated 6,464.42 metric tonnes of total waste in 2018, a net decrease of 536.75 metric tonnes or -7.7 percent. For just White Pine County, municipal solid waste represented a slight majority of total waste collected by landfills operating within White Pine County. Between 2013 and 2018, 52.6 percent, on average per year, of all waste entering White Pine County landfills was municipal solid waste and 47.4 percent, on average per year, of all waste entering White Pine County landfills was industrial waste.

Table 2.12 presents the average annual growth rate for both the amount of municipal solid waste (MSW) and industrial waste collected by landfills operating within each of the five counties within the Northeastern Nevada area for each year between 2013 and 2018.

<b>Table 2.12 – Annual Average Growth Rate of Municipal Solid Waste (MSW) and Industrial Waste Collected by Landfills within the Northeastern Nevada Regional Development Authority Area 2013 through 2018</b>							
<b>Jurisdiction and Type</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2013-2018 Average</b>
Humboldt Industrial	-	4.7%	-15.8%	-11.1%	65.4%	-41.8%	0.3%
Humboldt MSW	-	0.2%	3.0%	-2.4%	38.6%	-8.6%	6.2%
<b>Humboldt Total</b>	-	<b>4.1%</b>	<b>-13.3%</b>	<b>-9.7%</b>	<b>60.8%</b>	<b>-36.9%</b>	<b>1.0%</b>
Elko Industrial	-	-36.0%	90.7%	3.9%	-4.5%	14.1%	13.7%
Elko MSW	-	-2.5%	-19.4%	2.0%	2.0%	4.7%	-2.6%
<b>Elko Total</b>	-	<b>-8.6%</b>	<b>-5.4%</b>	<b>2.5%</b>	<b>0.3%</b>	<b>7.0%</b>	<b>-0.8%</b>
Eureka Industrial	-	38.5%	-65.0%	90.0%	10.7%	47.0%	24.2%
Eureka MSW	-	7.4%	-8.5%	-0.5%	-12.4%	-23.6%	-7.5%
<b>Eureka Total</b>	-	<b>34.8%</b>	<b>-59.7%</b>	<b>70.5%</b>	<b>7.8%</b>	<b>39.8%</b>	<b>18.7%</b>
Lander Industrial	-	-5.3%	25.1%	-14.9%	386.2%	-69.3%	64.4%
Lander MSW	-	-7.3%	-4.2%	7.6%	20.4%	4.4%	4.2%
<b>Lander Total</b>	-	<b>-5.5%</b>	<b>22.7%</b>	<b>-13.5%</b>	<b>357.7%</b>	<b>-67.8%</b>	<b>58.7%</b>
White Pine Industrial	-	9.9%	-11.0%	-9.8%	12.8%	10.8%	2.6%
White Pine MSW	-	1.3%	-0.6%	-2.4%	-1.9%	-4.2%	-1.6%
<b>White Pine Total</b>	-	<b>5.3%</b>	<b>-5.6%</b>	<b>-5.8%</b>	<b>4.6%</b>	<b>3.0%</b>	<b>0.3%</b>
NNRDA Industrial	-	1.9%	-8.5%	-7.7%	99.0%	-44.9%	8.0%
NNRDA MSW	-	-1.7%	-12.5%	0.5%	11.1%	-0.4%	-0.6%
<b>NNRDA Total</b>	-	<b>0.7%</b>	<b>-9.9%</b>	<b>-5.0%</b>	<b>68.3%</b>	<b>-34.6%</b>	<b>3.9%</b>

Source: Nevada Division of Environmental Protection, Bureau of Waste Management

Despite year-to-year fluctuation in the annual growth rate in the total amount of industrial waste and municipal solid waste combined entering landfills located throughout the five-county Northeastern Nevada area, the total amount of industrial waste and municipal waste entering

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landfills in Northeastern Nevada increased at an average annual rate of 3.9 percent per year between 2013 and 2018. The amount of just industrial waste entering landfills located throughout the five-county Northeastern Nevada area increased at an average annual rate of 8.0 percent per year and the amount of just municipal solid waste entering landfills located throughout the five-county Northeastern Nevada area decreased at an average annual rate of -0.6 percent per year. Each of the five counties within the Northeastern Nevada area exhibited a somewhat similar pattern as average annual rates of growth in the total amount of waste entering county-level landfills were largely driven by a positive average annual rate of growth in the amount of industrial waste entering area landfills with generally moderate or negative average annual rates of growth in the amount of municipal solid waste entering area landfills.

In Humboldt County, the total amount of industrial waste and municipal waste entering landfills operating within Humboldt County increased at an average annual rate of just 1.0 percent between 2013 and 2018. Unlike the larger five-county Northeastern Nevada area, the total amount of just industrial waste entering landfills operating within Humboldt County increased only slightly by an average annual rate of just 0.3 percent between 2013 and 2018 while the amount of just municipal solid waste entering landfills operating within Humboldt County increased at average annual rate of 6.2 percent per year between 2013 and 2018.

Unlike the larger five-county Northeastern Nevada area, the total amount of industrial waste and municipal waste entering landfills operating within Elko County decreased at an average annual rate of -0.8 percent per year between 2013 and 2018. The total amount of just industrial waste entering landfills operating within Elko County increased at an average annual rate of 13.7 percent between 2013 and 2018 and the total amount of just municipal solid waste entering landfills operating within Elko County decreased at an average annual rate of -2.6 percent between 2013 and 2018. Although the growth patterns in the average annual growth rate in the amount of industrial waste and municipal solid waste entering landfills operating within Elko County followed similar patterns for the entire five-county Northeastern Nevada area, the dominance of municipal solid waste as a source of total waste entering landfills in Elko County drove the negative average annual growth rate in the amount of total waste entering landfills operating within the county.

In Eureka County, the total amount of industrial waste and municipal waste entering landfills operating within Eureka County increased at an average annual rate of 18.7 percent between 2013 and 2018. Similar to the pattern found for the larger five-county Northeastern Nevada area, the total amount of just industrial waste entering landfills operating within Eureka County increased at an average annual rate of 24.2 percent between 2013 and 2018 while the amount of just municipal solid waste entering landfills operating within Eureka County decreased by an average annual rate of -7.5 percent between 2013 and 2018.

In Lander County, the total amount of industrial waste and municipal waste entering landfills operating within Lander County increased at an average annual rate of 58.7 percent between 2013 and 2018. Similar to the pattern observed for the larger five-county Northeastern Nevada area, the total amount of just industrial waste entering landfills operating within Lander County increased at an average annual rate of 64.4 percent between 2013 and 2018. However, unlike the pattern observed for the larger five-county Northeastern Nevada area, the total amount of just

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municipal solid waste entering landfills operating within Lander County increased at an average annual rate of 4.2 percent between 2013 and 2018.

Similar to the pattern found in the larger five-county Northeastern Nevada area, the total amount of industrial waste and municipal waste entering landfills operating within White Pine County increased at an average annual rate of 0.3 percent between 2013 and 2018. The total amount of just industrial waste entering landfills operating within White Pine County increased at an average annual rate of 2.6 percent between 2013 and 2018 and the total amount of just municipal solid waste entering landfills operating within White Pine County decreased by an average annual rate of -0.6 percent between 2013 and 2018.

### 2.3.c Discussion Regarding the Relationship Between Recyclable Waste Generated and Waste Collected by Landfills Operating within the Northeastern Nevada Regional Development Authority Area

As previously noted, the amount of municipal solid waste and commercial and industrial waste generated and transferred to community landfills is largely influenced by changes in the levels of economic activity, personal consumption patterns, and population growth. This section has presented an overview of the five-county Northeastern Nevada Regional Development Authority's area socio-demographic, economic, and industry sector and occupational sector characteristics in order to understand the drivers of municipal solid waste and commercial and industrial waste being generated throughout the area. Understanding these characteristics and the various patterns in what types of and how much waste is entering area landfills is the first step in determining the overall feasibility of developing a comprehensive recycling industry sector in Northeastern Nevada.

Generally, continued positive growth in a community's or region's total population, total number of households, median household income levels, median family income levels, per capita income levels, and total civilian workforce combined with decreases in a community's or region's civilian unemployment rate correlates positively with an increase in the amount of total waste produced by that community or region. Improved socio-demographic, economic, and industry sector and occupational sector characteristics lead to increased consumption and increased production and these increases in-turn lead to increases in the amount of waste produced by individuals who live in and firms that operate within that community or region. The specific characteristics of a community's or region's economic base will also significantly impact the quantity of and type of waste produced within that community or region. A community's or region's economic base that is dominated by a single firm or just a few individual firms or industry and occupational sectors will tend to become the largest single-point source(s) of waste. Recycling industry sectors can be established and customized to target the specific types and quantities of waste generated from the dominate firm(s) or industry and occupation sector(s). Ultimately, however, a community or region must generate enough total waste, or enough municipal solid waste and/or commercial and industrial waste, to produce enough potentially recycled materials to justify the creation of that recycling industry.

The various socio-demographic, economic, and industry sector and occupational sector characteristics of the entire Northeastern Nevada Regional Development area over the past

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several years, coupled with the overall growth in the amount of total municipal solid waste and commercial and industrial waste making its way into area landfills, suggests that the five-county Northeastern Nevada area could potentially support the development of a new recycling industry. As previously discussed in this section, the total population of the entire Northeastern Nevada Regional Development Authority area grew by 2,444 total individuals or 2.9 percent between 2013 and 2017 and the total number of households within this five-county area grew by 407 total households or 1.4 percent over the same 2013 to 2017 period. Median household income increased by \$7,443 or 11.8 percent between 2013 and 2017, median family income increased by \$11,594 or 15.1 percent between 2013 and 2017, and per capita income increased by \$3,152 or 11.5 percent between 2013 and 2017 throughout the Northeastern Nevada area. Between 2013 and 2017, the five-county area's total civilian workforce increased by 2,324 total workers or 3.6 percent while the Northeastern Nevada Regional Development Authority area's total civilian unemployment rate decreased by a total of 1.9 percent or -22.8 percent overall between 2013 and 2017.

The positive improvements in these various socio-demographic and economic conditions for the entire Northeastern Nevada Regional Development Authority area suggest that total amounts of potentially recyclable waste materials will continue to increase for the foreseeable future for the entire area. Between 2013 and 2018, the total amount of municipal solid waste and commercial and industrial waste combined and collected by landfills operating throughout the entire five-county Northeastern Nevada area increased at an annual average rate of 3.9 percent per year between 2013 and 2018. However, the actual total amount of municipal waste and commercial and industrial waste combined and collected by landfills operating throughout the entire five-county Northeastern Nevada area decreased from an estimated 256,487.30 metric tonnes of total waste collected in 2013 to 243,132.18 metric tonnes of total waste collected in 2018, a net decrease of 13,335.11 metric tonnes of total waste or -5.2 percent.

In fact, both total commercial and industrial waste and total municipal solid waste levels being collected by area landfills decreased between 2013 and 2018. Combined total commercial and industrial waste levels collected by area landfills within the Northeastern Nevada area decreased from an estimated 167,208.18 metric tonnes of total waste in 2013 to an estimated 157,760.22 metric tonnes of total waste in 2018, a net decrease of 9,447.97 metric tonnes or -5.7 percent. Total municipal solid waste levels collected by area landfills within the Northeastern Nevada area decreased from an estimated 89,279.11 metric tonnes of total waste in 2013 to an estimated 85,371.97 metric tonnes of total waste in 2018, a net decrease of 3,907.15 metric tonnes or -4.4 percent.

The apparent inconsistency in the behavior of the annual average growth rate in total municipal solid waste and total commercial and industrial waste, in total municipal solid waste alone, and in total commercial and industrial waste alone and in the behavior of the actual total amounts of waste generated area-wide is likely due to significant variation in the annual average levels of growth in the total amounts of waste being collected by landfills located throughout the Northeastern Nevada area. For example, between 2013 and 2014, the total amount of municipal solid waste and commercial and industrial waste combined and collected by area landfills grew by 0.7 percent but declined by -9.9 percent between 2014 and 2015 and then by -5.0 percent between 2015 and 2016. The total amount of municipal solid waste and commercial and

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industrial waste combined and collected by area landfills then grew substantially, by 68.3 percent, between 2016 and 2017 and then declined substantially, by -34.6 percent, between 2017 and 2018.

The individual year-by-year annual average growth rates of just total commercial and industry waste and just total municipal solid waste collected by area-wide landfills within the Northeastern Nevada area show a similar inconsistent pattern of growth and decline. Between 2013 and 2014, the total amount of just commercial and industrial waste collected by area landfills increased by 1.9 percent and then decreased by -8.5 percent between 2014 and 2015 and then by -7.7 percent between 2015 and 2016. The annual average growth rate in the total amount of commercial and industrial waste collected by area-wide landfills increased dramatically between 2016 and 2017, increasing by 99.0 percent, followed by a significant decline of -44.9 percent between 2017 and 2018. Between 2013 and 2014, the total amount of just municipal solid waste collected by area landfills decreased by 1.7 percent followed by a more significant decrease of -12.5 percent between 2014 and 2015. The annual average growth rate in the total amount of just municipal solid waste collected by area-wide landfills within the five-county Northeastern Nevada area increased slightly by 0.5 percent between 2015 and 2016 followed by a significant increase of 11.1 percent between 2016 and 2017 and then followed by a slight decrease of -0.4 percent between 2017 and 2018.

A successful recycling industry sector for the five-county Northeastern Nevada area will depend upon a steady and reliable source of potential recyclable materials as a key input into production. Future growth of any future recycling industry sector will further depend on a growing source of potential recyclable materials from both within and potentially from outside the five-county area. The past six years of available landfill receiving data for landfills operating within the five-county Northeastern Nevada area suggests that a reliable source and future growing source of potential recyclable materials is not available at this time despite continued growth and improvement in the region's various underlying socio-demographic and economic conditions. However, it may be possible to build a new recycling industry for the five-county Northeastern Nevada area on commercial and industrial waste sources and from identifiable single point sources of waste materials. Between 2013 and 2018, as previously mentioned, total commercial and industrial waste materials collected by area-wide landfills within the Northeastern Nevada area grew at an annual average rate of 8.0 percent per year while total municipal waste materials collected by area-wide landfills decreased by -0.6 per year. Over this same six-year period, commercial and industrial waste accounted for, on average, 67.5 percent of all waste collected on an annual basis by area landfills while municipal solid waste accounted for, on average, 32.5 percent of all waste collected on an annual basis by area landfills.

The economic dominance of the Mining, Quarrying, and Oil and Gas Extraction industry sector within the Northeastern Nevada Regional Development Authority area, generating 11,498 total jobs in 2018 alone with a location quotient of 61.97 and generating approximately \$3.86 billion in total annual economic output in 2018, suggests that firms within this industry sector are the primary single point source of commercial and industrial waste materials within the five-county area. A new recycling industry sector in Northeastern Nevada could potentially benefit from being able to tailor their, at least, initial and start-up processes to serve this primary industry sector by focusing on efforts to recycle potential recyclable materials being generated by firms

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operating within the Mining, Quarrying, and Oil and Gas Extraction industry sector. Furthermore, the current condition of the Administrative and Support and Waste Management and Remediation Services industry sector, generating 949 total jobs in 2018 alone with a location quotient of 0.34 and generating approximately \$57.62 million in total annual economic output in 2018, suggests that there is room for economic growth within the Northeastern Nevada Regional Development Authority area for the Administrative and Support and Waste Management and Remediation Services industry sector.

The next step in determining the overall feasibility of developing a comprehensive recycling industry sector in Northeastern Nevada involves assessing the change in prices for recycled waste materials within regional and national recycled waste material markets. The results of the analysis for this next step is presented in the next section of this University Center for Economic Development technical report.



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## 3.0 Price Model of Recycled Materials Generated in Northeastern Nevada

Prevailing and predicted prices for recycled materials is a critical element in determining the overall market and technical feasibility for establishing a new recycling industry in Northeastern Nevada. If prices are too low, individual recycling firms will be unable to generate sufficient revenue to support commercial activity. If prices are too high, individual firms may lose market share to firms producing non-recycled substitute products. This section presents regional (defined as states located within the Southwestern United States) and national (including all of the United States and parts of Canada) pricing data for various recycled materials. The selection of recycled materials included in the following price models was made using the list of potentially recyclable waste generated by current mining operations located in Northeastern Nevada and listed in Table 2.11 in Section 2.0 of this University Center for Economic Development technical report.

### 3.1 Methodology in Developing Price Models of Recyclable Commodities

All historical pricing data was obtained from public sources available from [www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com) and the prices for individual recyclable materials were sorted into three primary categories including: (1) plastics, (2) metals, and (3) paper. Price data for individual recyclable materials for each of these three primary categories were then analyzed and estimated. Polyethylene Terephthalate (PET) Baled, Natural High Density Polyethylene (HDPE), and Colored High Density Polyethylene (HDPE) were examined individually for the plastics category. Aluminum Cans Sorted, Aluminum Cans Loose, Steel Cans Sorted Baled, Steel Cans Sorted Densified, Steel Cans Loose, and White Goods Loose were examined individually for the metals category. Mixed Paper, Sorted Residential, Corrugated Containers, and Office Paper were examined individually for the paper category. A total of 13 separate finished recyclable commodities were examined in the development of a larger price model for recyclable commodities that could potentially be developed from waste generated in Northeastern Nevada.

Noticeably absent from these three primary categories are recyclable commodities produced from various types of glass and recyclable commodities produced from various types of rubber. In general, pricing data for recyclable glass and rubber at a regional or national level was unavailable given the high variability in local prices or the general lack of data that is collected on these types of recyclable commodities. Upon interviews with representatives from the Nevada Division of Environmental Protection and the University of Nevada, Reno's Business Environmental Program, it was decided to forgo any estimation of historical, current, or predicted future prices for recycled glass and rubber commodities due to the high degree of error or missing market price data for these two potential recyclable commodities. While reliable price data was unavailable, the potential recycling of glass and rubber in a Northeastern Nevada

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recycling industry is addressed to some degree in Section 4.0 and Section 5.0 of this University Center for Economic Development technical report.

Both regional and national prices for the 13 selected recyclable commodities were examined and considered. The regional average prices presented in this section refer to the Southwestern United States, defined as Region 9 by the U.S. Environmental Protection Agency. U.S. Environmental Protection Agency Region 9 includes the states of Arizona, California, Hawaii, and Nevada. The national average prices presented in this section include all ten U.S. Environmental Protection Agency regions which includes all 50 states plus America Samoa, the District of Columbia, the Northern Mariana Islands, Puerto Rico, the Trust Territories, and the U.S. Virgin Islands. The national average prices presented in this section also include parts of Canada including the provinces of Ontario and Quebec.

Determining a suitable time period for the analysis presented in this section was difficult as the available price data was collected and published on a weekly basis in some cases and on a day-to-day basis. Because of this inconsistency, a specific time period (i.e. price per week or price per day) was not specified. While this inconsistency does not invalidate the long-term trend analysis presented in this section, it is important to note that price fluctuations in recyclable commodities tend to vary daily and weekly and this fluctuation could potentially impact day-to-day operations of firms producing recyclable materials from generated waste. Whenever possible, the time period of August 26, 2016 to January 10, 2020 was used in the analysis presented in this section. If price data for specific recyclable commodities were not available from August 26, 2016, the earliest available date for the specific recyclable commodity was used as the starting part in the analysis.

## **3.2 Historical and Current Prices for Recycled Plastics**

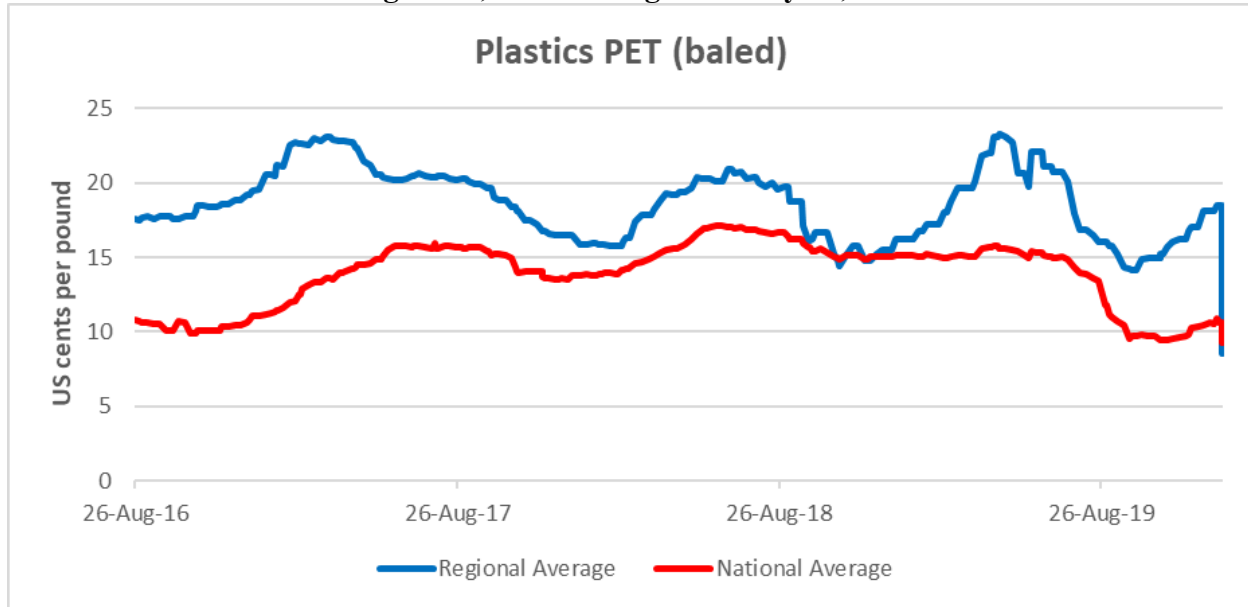
For the plastics primary recycling commodity category, the commodities of Polyethylene Terephthalate (PET) Baled, Natural High Density Polyethylene (HDPE), and Colored High Density Polyethylene (HDPE) were examined and the resulting price models are presented in this sub-section.

### **3.2.a Polyethylene Terephthalate (PET) Baled Plastics**

Figure 3.1 presents both the regional and national modeled analysis and changes in prices for PET Baled plastics. The results are presented in U.S. cents per pound.

Since August 26, 2016, the average regional price of PET Baled plastics has decreased from an estimated \$0.1757 per pound to an estimated \$0.0850 per pound, a net decrease of \$0.0907 per pound or -51.6 percent. The average regional price per pound over this nearly three and a half year period was \$0.1859 per pound (with a reported standard deviation of \$0.0245 per pound). Over the same time period, the average national price of PET Baled plastics has decreased from an estimated \$0.1082 per pound to an estimated \$0.0928 per pound, a net decrease of \$0.0154 per pound or -14.2 percent. The average national price per pound over this nearly three and a half year period was \$0.1381 per pound (with a reported standard deviation of \$0.0240).

**Figure 3.1 – Regional and National Average Historical Prices of PET Baled Plastics  
August 26, 2016 through January 10, 2020**



Source: *Regional and National Price Data, PET Baled Plastics*,  
[www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Table 3.1 presents the estimated summary statistics for regional and national prices for PET Baled plastics for the trend lines presented in Figure 3.1.

<b>Table 3.1 – Summary Descriptive Statistics PET Baled Plastics, Regional and National Price Data August 26, 2016 through January 10, 2020</b>						
Variable	No. of Observations	Average	Standard Deviation	Coefficient of Variation	Minimum	Maximum
Regional Average	258	18.59	2.45	13.17%	8.5	23.25
National Average	258	13.81	2.24	16.23%	9.28	17.11

Source: *Regional and National Price Data, PET Baled Plastics*,  
[www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Using the resulting summary descriptive statistics presented in Table 3.1, two separate regression models, one for the regional average price of PET Baled plastics and one for the national average price of PET Baled plastics, were developed. In both Equation 1 and Equation 2, price is regressed on time. Equation 1 predicts the regional average price of PET Baled plastics and Equation 2 predicts the national average price of PET Baled plastics. As Equation 1 demonstrates, the predicted regional price of PET Baled plastics will decrease by an estimated \$0.0001 per pound for each subsequent time period and, as Equation 2 demonstrates, the

predicted national price of PET Baled plastics will decrease by an estimated \$0.0003 per pound for each subsequent time period.

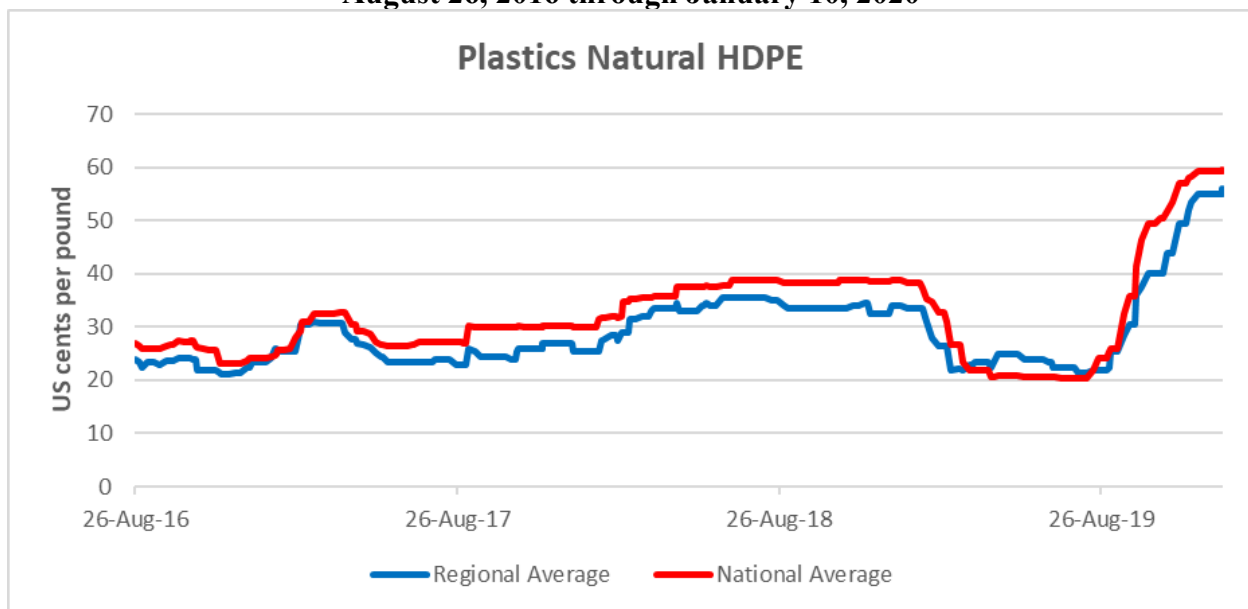
$$(1) \text{ Regional Average Price of Plastics PET (baled)} = 19.99 - 0.01\text{time}, R^2 = 0.105 \\ (0.289)^{***1} (0.002)^{***}$$

$$(2) \text{ National Average Price of Plastics PET (baled)} = 13.44 + 0.003\text{time}, R^2 = 0.005 \\ (0.279)^{***} (0.002)$$

### 3.2.b Natural High Density Polyethylene (HDPE) Plastics

Figure 3.2 presents both the regional and national modeled analysis and changes in prices for Natural HDPE plastics. The results are presented in U.S. cents per pound.

**Figure 3.2 – Regional and National Average Historical Prices of Natural HDPE Plastics August 26, 2016 through January 10, 2020**



Source: Regional and National Price Data, Natural HDPE Plastics, [www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Since August 26, 2016, the average regional price of Natural HDPE plastics has increased from an estimated \$0.2400 per pound to an estimated \$0.5600 per pound, a net increase of \$0.3200 per pound or 133.3 percent. The average regional price per pound over this nearly three and a half year period was \$0.2913 per pound (with a reported standard deviation of \$0.0737 per pound). Over the same period, the average national price of Natural HDPE plastics has also increased,

<sup>1</sup> No\* = p-value > 0.10

\* = 0.05 < p-value < 0.10

\*\* = 0.01 < p-value < 0.05

\*\*\* = p-value < 0.01

increasing from an estimated \$0.2694 per pound to an estimated \$0.5947 per pound, a net increase of \$0.3253 per pound or 120.8 percent. The average national price per pound over this nearly three and a half year period was \$0.3210 per pound (with a reported standard deviation of \$0.0897).

Table 3.2 presents the estimated summary statistics for regional and national prices for Natural HDPE plastics for the trend lines presented in Figure 3.2.

<b>Table 3.2 – Summary Descriptive Statistics</b> <b>Natural HDPE Plastics, Regional and National Price Data</b> <b>August 26, 2016 through January 10, 2020</b>						
<b>Variable</b>	<b>No. of Observations</b>	<b>Average</b>	<b>Standard Deviation</b>	<b>Coefficient of Variation</b>	<b>Minimum</b>	<b>Maximum</b>
Regional Average	258	29.13	7.37	25.29%	21	56
National Average	258	32.10	8.97	27.95%	20.34	59.47

Source: *Regional and National Price Data, Natural HDPE Plastics*,  
[www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Using the resulting summary descriptive statistics presented in Table 3.2, two separate regression models, one for the regional average price of Natural HDPE plastics and one for the national average price of Natural HDPE plastics, were developed. In both Equation 3 and Equation 4, price is regressed on time. Equation 3 predicts the regional average price of PET Baled plastics and Equation 4 predicts the national average price of Natural HDPE plastics. As Equation 3 demonstrates, the predicted regional price of Natural HDPE plastics will increase by an estimated \$0.0005 per pound for each subsequent time period and, as Equation 4 demonstrates, the predicted national price of Natural HDPE plastics will increase by an estimated \$0.0005 per pound for each subsequent time period.

$$(3) \text{ Regional Average Price of Plastics Natural HDPE} = 22.92 + 0.05\text{time}, R^2 = 0.236 \\ (0.81)^{***} (0.01)^{***}$$

$$(4) \text{ National Average Price of Plastics Natural HDPE} = 25.73 + 0.05\text{time}, R^2 = 0.168 \\ (1.02)^{***} (0.01)^{***}$$

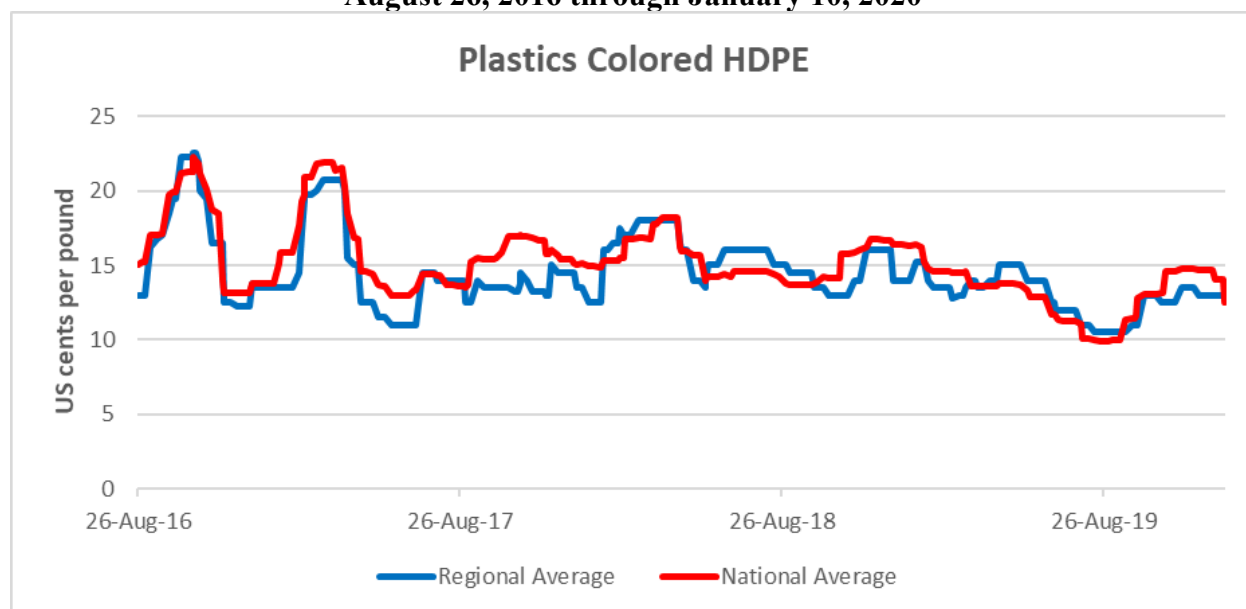
### 3.2.c Colored High Density Polyethylene (HDPE) Plastics

Figure 3.3 presents both the regional and national modeled analysis and changes in prices for Colored HDPE plastics. The results are presented in U.S. cents per pound.

The average regional price of HDPE Plastics remained unchanged with an estimated \$0.1300 per pound on August 26, 2016 and with an estimated \$0.1300 per pound on January 10, 2020. The average regional price per pound over this nearly three and a half year period was \$0.1448 per pound (with a reported standard deviation of \$0.0253). Between August 16, 2016 and January

10, 2020, the average national price of HDPE Plastics decreased from an estimated \$0.1500 per pound to an estimated \$0.1253, a net decrease of \$0.0247 per pound or -16.5 percent. The average national price per pound over this nearly three and a half year period was \$0.1506 (with a reported standard deviation of \$0.0252).

**Figure 3.3 – Regional and National Average Historical Prices of Colored HDPE Plastics August 26, 2016 through January 10, 2020**



Source: *Regional and National Price Data, Colored HDPE Plastics*, [www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Table 3.3 presents the estimated summary statistics for regional and national prices for Colored HDPE plastics for the trend lines presented in Figure 3.3.

<b>Table 3.3 – Summary Descriptive Statistics Colored HDPE Plastics, Regional and National Price Data August 26, 2016 through January 10, 2020</b>						
Variable	No. of Observations	Average	Standard Deviation	Coefficient of Variation	Minimum	Maximum
Regional Average	258	14.48	2.53	17.46%	10.5	22.5
National Average	258	15.06	2.52	16.76%	9.92	22.31

Source: *Regional and National Price Data, Colored HDPE Plastics*, [www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Using the resulting summary descriptive statistics presented in Table 3.3, two separate regression models, one for the regional average price of Colored HDPE plastics and one for the national average price of Colored HDPE plastics, were developed. In both Equation 5 and Equation 6, price is regressed on time.

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$$(5) \text{ Regional Average Price of Plastics Colored HDPE} = 16.36 - 0.01time$$

(0.29)\*\*\* (0.002)\*\*\*

$$(6) \text{ National Average Price of Plastics Colored HDPE} = 17.55 - 0.02time$$

(0.26)\*\*\* (0.002)\*\*\*

Equation 5 predicts the regional average price of Colored HDPE plastics and Equation 6 predicts the national average price of Colored HDPE plastics. As Equation 5 demonstrates, the predicted regional price of Colored HDPE plastics will decrease by an estimated \$0.0001 per pound for each subsequent time period and, as Equation 6 demonstrates, the predicted national price of Colored HDPE plastics will decrease by an estimated \$0.0002 per pound for each subsequent time period.

### 3.3 Historical and Current Prices for Recycled Metals

For the metals primary recycling commodity category, the commodities of Aluminum Cans Sorted, Aluminum Cans Loose, Steel Cans Sorted Baled, Steel Cans Sorted Densified, Steel Cans Loose, and White Goods Loose were examined and the resulting price models are presented in this sub-section.

#### 3.3.a Aluminum Cans Sorted

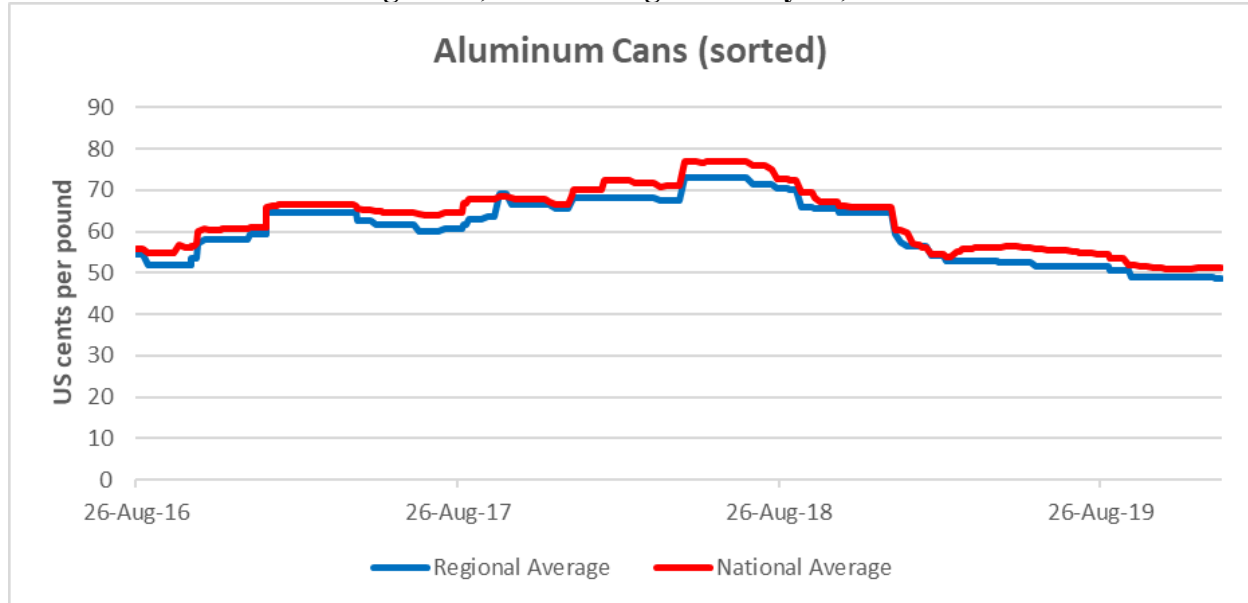
Figure 3.4 presents both the regional and national modeled analysis and changes in prices for Aluminum Cans Sorted for the period between August 26, 2016 and January 10, 2020. The results are presented in U.S. cents per pound.

Between August 26, 2016 and January 10, 2020, the average regional price of Aluminum Cans Sorted has decreased from an estimated \$0.6041 per pound on August 26, 2016 to an estimated \$0.5450 per pound on January 10, 2020, a net decrease of \$0.0591 per pound or -9.8 percent. The average regional price per pound for Aluminum Cans Sorted over this nearly three and a half year period was \$0.6041 per pound (with a reported standard deviation of \$0.0745 per pound).

Over the same August 26, 2016 to January 10, 2020 time period, the average national price of Aluminum Cans Sorted has decreased from \$0.5581 per pound on August 26, 2016 to \$0.5119 per pound on January 10, 2020, a net decrease of \$0.0462 per pound or -8.3 percent. The average national price per pound for Aluminum Cans Sorted over this nearly three and a half year period was \$0.6314 per pound (with a reported standard deviation of \$0.0758).

Following Figure 3.4, Table 3.4 presents the estimated summary statistics, including the estimated total number of observations, the average, the standard deviation, the coefficient of variation, and the minimum and maximum for regional and national prices of Aluminum Cans Sorted for the trend lines presented in Figure 3.4.

**Figure 3.4 – Regional and National Average Historical Prices of Aluminum Cans Sorted  
August 26, 2016 through January 10, 2020**



Source: *Regional and National Price Data, Aluminum Cans Sorted*,  
[www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

<b>Table 3.4 – Summary Descriptive Statistics Aluminum Cans Sorted, Regional and National Price Data August 26, 2016 through January 10, 2020</b>						
Variable	No. of Observations	Average	Standard Deviation	Coefficient of Variation	Minimum	Maximum
Regional Average	258	60.41	7.45	12.33%	48.5	73
National Average	258	63.14	7.58	12.00%	51.06	76.81

Source: *Regional and National Price Data, Aluminum Cans Sorted*,  
[www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Using the resulting summary descriptive statistics presented in Table 3.4, two separate regression models, one for the regional average price of Aluminum Cans Sorted and one for the national average price of Aluminum Cans Sorted, were developed.

$$(7) \text{ Regional Average Price of Aluminum Cans (Sorted)} = 65.72 - 0.04time \\ (0.85)^{***} (0.01)^{***}$$

$$(8) \text{ National Average Price of Aluminum Cans (Sorted)} = 68.38 - 0.04time \\ (0.87)^{***} (0.01)^{***}$$

In both Equation 7 and Equation 8, price is regressed on time. Equation 7 predicts the regional average price of Aluminum Cans Sorted and Equation 8 predicts the national average price of

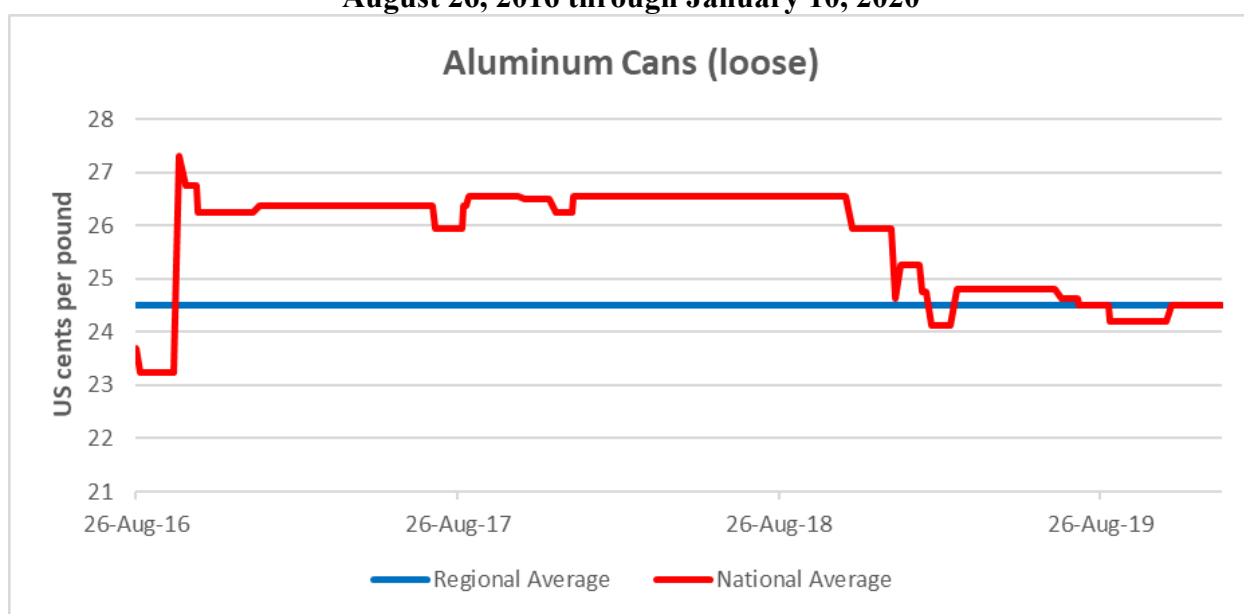


Aluminum Cans Sorted. As Equation 7 demonstrates, the predicted regional price of Aluminum Cans Sorted will decrease by an estimated \$0.0004 per pound for each subsequent time period and, as Equation 8 demonstrates, the predicted national price of Aluminum Cans Sorted will decrease by an estimated \$0.0004 per pound for each subsequent time period.

### 3.3.b Aluminum Cans Loose

Figure 3.5 presents both the regional and national modeled analysis and changes in prices for Aluminum Cans Loose for the period between August 26, 2016 and January 10, 2020. The results are presented in U.S. cents per pound.

**Figure 3.5 – Regional and National Average Historical Prices of Aluminum Cans Loose  
August 26, 2016 through January 10, 2020**



Source: *Regional and National Price Data, Aluminum Cans Loose*,  
[www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Between August 26, 2016 and January 10, 2020, the average regional price of Aluminum Cans Loose remained unchanged with an estimated average price of \$0.2450 per pound on August 26, 2016 and with an estimated average price of \$0.2450 per pound on January 10, 2020. The average regional price per pound for Aluminum Cans Loose over this nearly three and a half year period was \$0.2450 per pound (with a reported standard deviation of \$0.0000). Over the same August 26, 2016 to January 10, 2020 time period, the average national price of Aluminum Cans Loose has increased from an estimated \$0.2369 per pound on August 26, 2016 to an estimated \$0.2450 per pound on January 10, 2020, a net increase of \$0.0081 per pound or 3.4 percent. The average national price per pound for Aluminum Cans Loose over this nearly three and a half year period was \$0.2574 per pound (with a reported standard deviation of \$0.0100).

Table 3.5 presents the estimated summary statistics for regional and national prices for Aluminum Cans Loose for the trend lines presented in Figure 3.5.

<b>Table 3.5 – Summary Descriptive Statistics Aluminum Cans Loose, Regional and National Price Data August 26, 2016 through January 10, 2020</b>						
<b>Variable</b>	<b>No. of Observations</b>	<b>Average</b>	<b>Standard Deviation</b>	<b>Coefficient of Variation</b>	<b>Minimum</b>	<b>Maximum</b>
Regional Average	258	24.50	0.00	0.00%	24.5	24.5
National Average	258	25.74	1.00	3.88%	23.25	27.31

Source: *Regional and National Price Data, Aluminum Cans Loose*,  
[www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Using the resulting summary descriptive statistics presented in Table 3.5, two separate regression models, one for the regional average price of Aluminum Cans Loose and one for the national average price of Aluminum Cans Loose, were developed.

$$(9) \text{ Regional Average Price of Aluminum Cans (loose)} = 24.5 + 0 \text{time}$$

$$(10) \text{ National Average Price of Aluminum Cans (loose)} = 26.64 - 0.007 \text{time} \\ (0.11)^{***} (0.001)^{***}$$

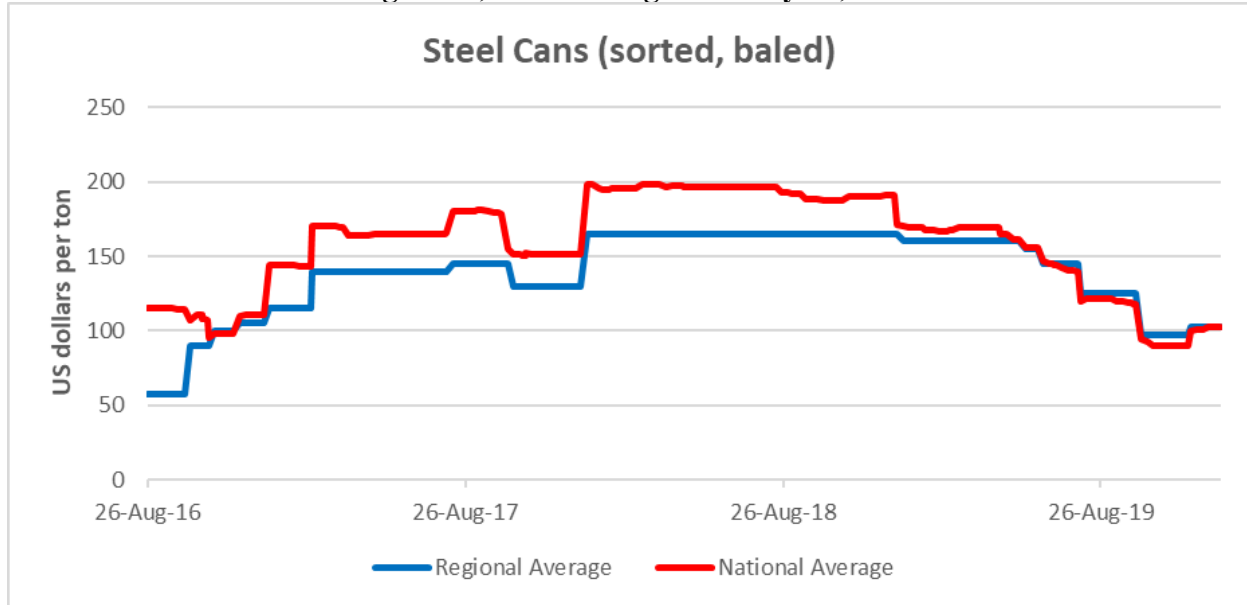
In both Equation 9 and Equation 10, price is regressed on time. Equation 9 predicts the regional average price of Aluminum Cans Loose and Equation 10 predicts the national average price of Aluminum Cans Loose. As Equation 9 demonstrates, the predicted regional price of Aluminum Cans Loose will remain unchanged in each subsequent time period and, as Equation 10 demonstrates, the predicted national price of Aluminum Cans Loose will decrease by an estimated \$0.0007 per pound for each subsequent time period.

### 3.3.c Steel Cans Sorted Baled

Figure 3.6 presents both the regional and national modeled analysis and changes in prices for Steel Cans Sorted Baled for the period between August 26, 2016 and January 10, 2020. The results are presented in U.S. dollars per ton.

Between August 26, 2016 and January 10, 2020, the average regional price of Steel Cans Sorted Baled increased from an estimated \$57.50 per ton to an estimated \$102.50 per ton, an increase of approximately \$45.00 or 78.3 percent. The average regional price per ton for Steel Cans Sorted Baled over this nearly three and a half year period was \$138.36 per ton (with a reported standard deviation of \$27.88). Over the same August 26, 2016 to January 10, 2020 time period, the average national price of Steel Cans Sorted Baled has decreased from an estimated \$115.63 per ton on August 26, 2016 to an estimated \$102.81 per ton on January 10, 2020, a net decrease of \$12.82 per ton or -11.1 percent. The average national price per ton for Steel Cans Sorted Baled over this nearly three and a half year period was \$157.29 per ton (with a reported standard deviation of \$33.13).

**Figure 3.6 – Regional and National Average Historical Prices of Steel Cans Sorted Baled  
August 26, 2016 through January 10, 2020**



Source: *Regional and National Price Data, Steel Cans Sorted Baled*,  
[www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Table 3.6 presents the estimated summary statistics for regional and national prices for Steel Cans Sorted Baled for the trend lines presented in Figure 3.6.

<b>Table 3.6 – Summary Descriptive Statistics Steel Cans Sorted Baled, Regional and National Price Data August 26, 2016 through January 10, 2020</b>						
<b>Variable</b>	<b>No. of Observations</b>	<b>Average</b>	<b>Standard Deviation</b>	<b>Coefficient of Variation</b>	<b>Minimum</b>	<b>Maximum</b>
Regional Average	258	138.36	27.88	20.15%	57.5	165
National Average	258	157.29	33.13	21.06%	90.31	198.44

Source: *Regional and National Price Data, Steel Cans Sorted Baled*,  
[www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Using the resulting summary descriptive statistics presented in Table 3.6, two separate regression models, one for the regional average price of Steel Cans Sorted Baled and one for the national average price of Steel Cans Sorted Baled, were developed.

$$(11) \text{ Regional Average Price of Steel Cans ( baled) } = 123.49 + 0.11\text{time}, R^2 = 0.095 \\ (3.319)^{***} (0.022)^{***}$$

$$(12) \text{ National Average Price of Steel Cans ( baled) } = 159.9 - 0.02\text{time}, R^2 = 0.002 \\ (4.141)^{***} (0.028)$$

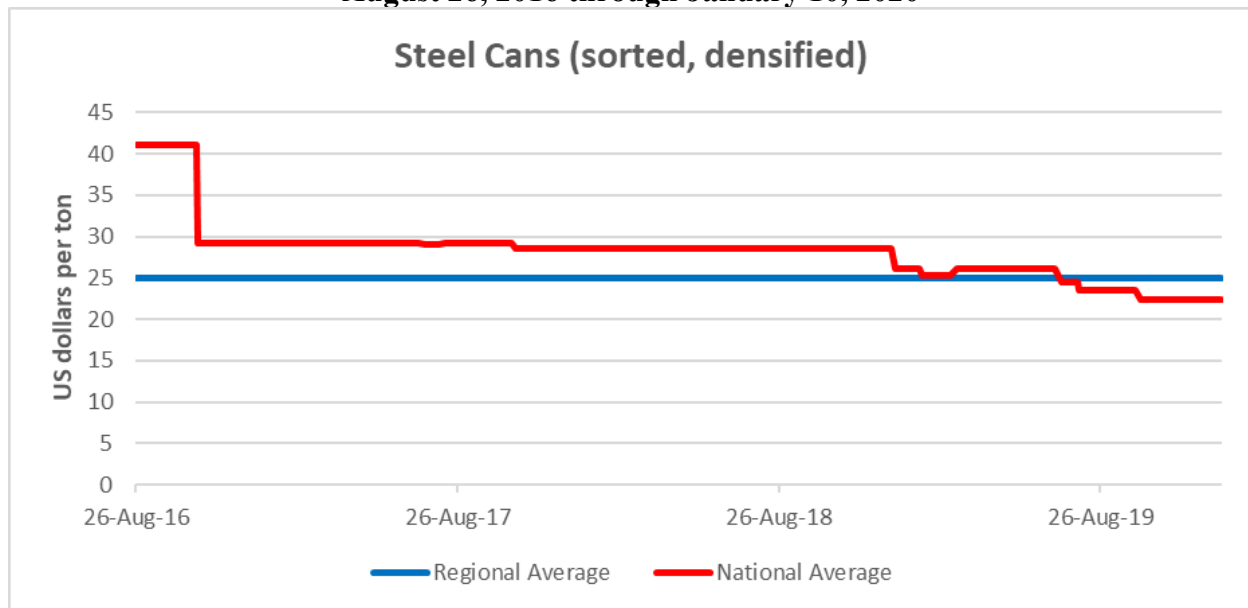
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In both Equation 11 and Equation 12, price is regressed on time. Equation 11 predicts the regional average price of Steel Cans Sorted Baled and Equation 12 predicts the national average price of Steel Cans Sorted Baled. As Equation 11 demonstrates, the predicted regional price of Steel Cans Sorted Baled will increase by an estimated \$0.11 per ton in each subsequent time period and, as Equation 12 demonstrates, the predicted national price of Steel Cans Sorted Baled will decrease by an estimated \$0.02 per ton for each subsequent time period.

### 3.3.d Steel Cans Sorted Densified

Figure 3.7 presents both the regional and national modeled analysis and changes in prices for Steel Cans Sorted Densified for the period between August 26, 2016 and January 10, 2020. The results are presented in U.S. dollars per ton.

**Figure 3.7 – Regional and National Average Historical Prices of Steel Cans Sorted Densified  
August 26, 2016 through January 10, 2020**



Source: *Regional and National Price Data, Steel Cans Sorted Densified*,  
[www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Between August 26, 2016 and January 10, 2020, the average regional price of Steel Cans Sorted Densified remained unchanged with an average regional price of \$25.00 per ton on both August 26, 2016 and on January 10, 2020. The average regional price per ton for Steel Cans Sorted Densified over this nearly three and a half year period was \$25.00 per ton (with a reported standard deviation of \$0.00). Over the same August 26, 2016 to January 10, 2020 time period, the average national price of Steel Cans Sorted Densified has decreased from an estimated \$41.00 per ton on August 26, 2016 to an estimated \$22.33 per ton on January 10, 2020, a net decrease of \$18.67 per ton or -45.5 percent. The average national price per ton for Steel Cans

Sorted Densified over this nearly three and a half year period was \$28.19 per ton (with a reported standard deviation of \$3.86).

Table 3.7 presents the estimated summary statistics for regional and national prices of Steel Cans Sorted Densified for the trend lines presented in Figure 3.7.

<b>Table 3.7 – Summary Descriptive Statistics</b> <b>Steel Cans Sorted Densified, Regional and National Price Data</b> <b>August 26, 2016 through January 10, 2020</b>						
<b>Variable</b>	<b>No. of Observations</b>	<b>Average</b>	<b>Standard Deviation</b>	<b>Coefficient of Variation</b>	<b>Minimum</b>	<b>Maximum</b>
Regional Average	258	138.36	27.88	20.15%	57.5	165
National Average	258	157.29	33.13	21.06%	90.31	198.44

Source: *Regional and National Price Data, Steel Cans Sorted Densified*,  
[www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Using the resulting summary descriptive statistics presented in Table 3.7, two separate regression models, one for the regional average price of Steel Cans Sorted Densified and one for the national average price of Steel Cans Sorted Densified, were developed.

$$(13) \text{ Regional Average Price of Steel Cans (densified)} = 25 + 0time, R^2 = 1$$

(0)      (0)

$$(14) \text{ National Average Price of Steel Cans (densified)} = 33.4 - 0.04time, R^2 = 0.605$$

(0.303)\*\*\* (0.002)\*\*\*

In both Equation 13 and Equation 14, price is regressed on time. Equation 13 predicts the regional average price of Steel Cans Sorted Densified and Equation 14 predicts the national average price of Steel Cans Sorted Densified. As Equation 13 demonstrates, the predicted regional price of Steel Cans Sorted Densified will remain unchanged in each subsequent time period and, as Equation 14 demonstrates, the predicted national price of Steel Cans Sorted Densified will decrease by an estimated \$0.04 per ton for each subsequent time period.

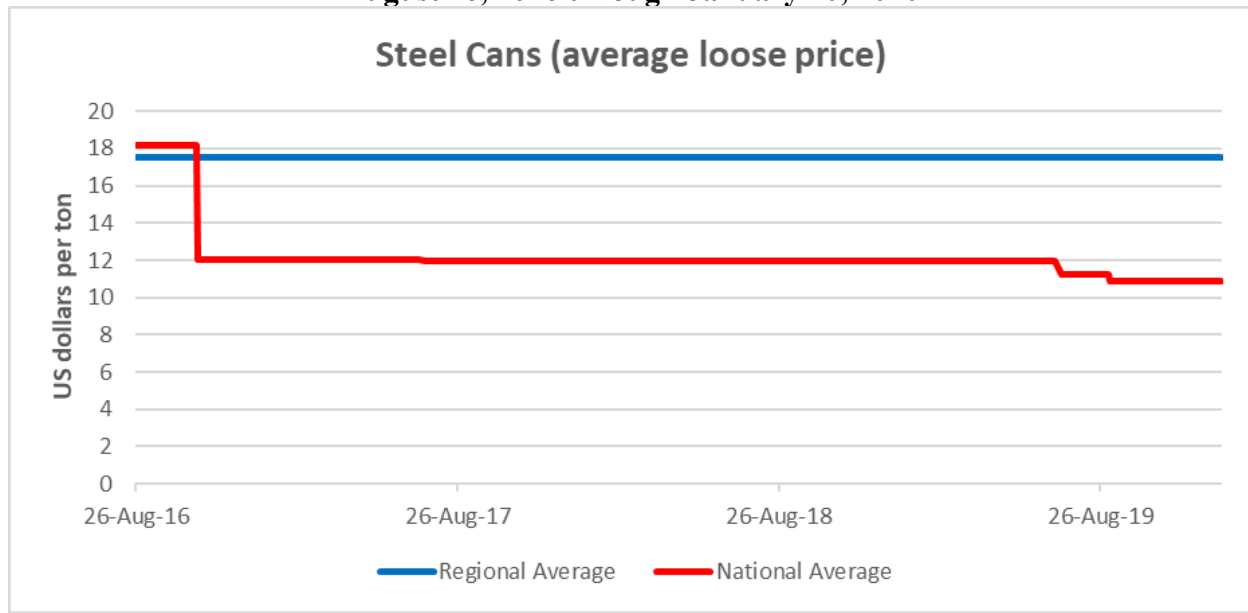
### 3.3.e Steel Cans Loose

Figure 3.8 presents both the regional and national modeled analysis and changes in prices for Steel Cans Loose for the period between August 26, 2016 and January 10, 2020. The results are presented in U.S. dollars per ton.

Between August 26, 2016 and January 10, 2020, the average regional price of Steel Cans Loose remained unchanged with an average regional price of \$17.50 per ton on August 26, 2016 and with an average regional price of \$17.50 per ton on January 10, 2020. The average regional price per ton for Steel Cans Loose over this nearly three and a half year period was \$17.50 per ton (with a reported standard deviation of \$0.00). Over the same August 26, 2016 to January 10, 2020 time period, the average national price of Steel Cans Loose has decreased from an

estimated \$18.21 per ton on August 26, 2016 to an estimated \$10.86 per ton on January 10, 2020, a net decrease of \$7.35 per ton or -40.4 percent. The average national price per pound for Steel Cans Loose over this nearly three and a half year period was \$12.16 per ton (with a reported standard deviation of \$1.55).

**Figure 3.8 – Regional and National Average Historical Prices of Steel Cans Loose  
August 26, 2016 through January 10, 2020**



Source: *Regional and National Price Data, Steel Cans Loose*,  
[www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Table 3.8 presents the estimated summary statistics for regional and national prices of Steel Cans Sorted Densified for the trend lines presented in Figure 3.8.

<b>Table 3.8 – Summary Descriptive Statistics Steel Cans Loose, Regional and National Price Data August 26, 2016 through January 10, 2020</b>						
Variable	No. of Observations	Average	Standard Deviation	Coefficient of Variation	Minimum	Maximum
Regional Average	258	17.50	0.00	0.00%	17.5	17.5
National Average	258	12.16	1.55	12.73%	10.86	18.21

Source: *Regional and National Price Data, Steel Cans Loose*,  
[www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Using the resulting summary descriptive statistics presented in Table 3.8, two separate regression models, one for the regional average price of Steel Cans Loose and one for the national average price of Steel Cans Loose, were developed.

$$(15) \text{ Regional Average Price of Steel Cans (loose)} = 17.5 + 0time, R^2 = 1$$

(0)      (0)

$$(16) \text{ National Average Price of Steel Cans (loose)} = 13.61 - 0.01time, R^2 = 0.289$$

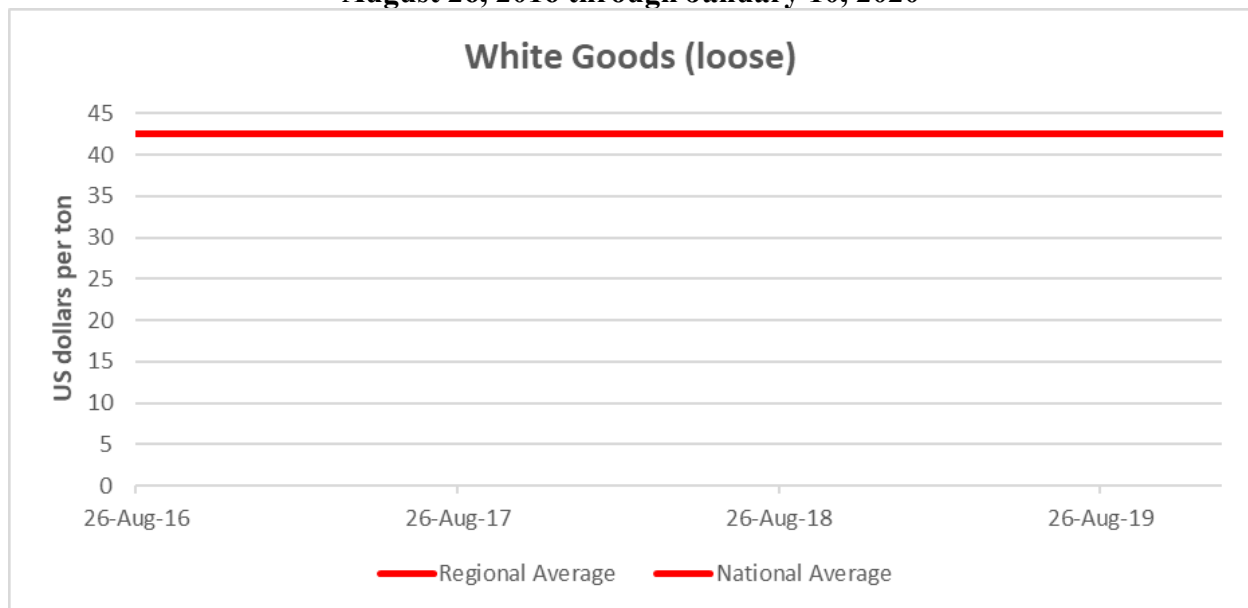
(0.163)\*\*\* (0.001)\*\*\*

In both Equation 15 and Equation 16, price is regressed on time. Equation 15 predicts the regional average price of Steel Cans Loose and Equation 16 predicts the national average price of Steel Cans Loose. As Equation 15 demonstrates, the predicted regional price of Steel Cans Loose will remain unchanged in each subsequent time period and, as Equation 16 demonstrates, the predicted national price of Steel Cans Loose will decrease by an estimated \$0.01 per ton for each subsequent time period.

### 3.3.f White Goods Loose

Figure 3.9 presents both the regional and national modeled analysis and changes in prices for White Goods Loose, typically comprising discarded appliances, for the period between August 26, 2016 and January 10, 2020. The results are presented in U.S. dollars per ton. Note that the pricing data and subsequent analysis for both regional and national prices for White Goods Loose were identical.

**Figure 3.9 – Regional and National Average Historical Prices of White Goods Loose  
August 26, 2016 through January 10, 2020**



Source: *Regional and National Price Data, White Goods Loose*,  
[www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Between August 26, 2016 and January 10, 2020, the average regional price of White Good Loose remained unchanged with an average regional price of \$42.50 per ton on both August 26, 2016 and on January 10, 2020. The average regional price per ton for White Goods Loose over this

nearly three and a half year period was also \$42.50 per ton (with a reported standard deviation of \$0.00). Over the same August 26, 2016 to January 10, 2020 time period, the average national price of White Goods Loose remained unchanged with an average national price of \$42.50 per ton. The average national price per pound for White Goods Loose over this nearly three and a half year period was also \$42.50 per ton (with a reported standard deviation of \$0.00).

Table 3.9 presents the estimated summary statistics for regional and national prices Steel Cans Sorted Densified for the trend lines presented in Figure 3.9.

<b>Table 3.9 – Summary Descriptive Statistics</b> <b>White Goods Loose, Regional and National Price Data</b> <b>August 26, 2016 through January 10, 2020</b>						
<b>Variable</b>	<b>No. of Observations</b>	<b>Average</b>	<b>Standard Deviation</b>	<b>Coefficient of Variation</b>	<b>Minimum</b>	<b>Maximum</b>
Regional Average	258	42.5	0	0.00%	42.5	42.5
National Average	258	42.5	0	0.00%	42.5	42.5

Source: *Regional and National Price Data, White Goods Loose*,  
[www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Using the resulting summary descriptive statistics presented in Table 3.9, two separate but identical regression models, one for the regional average price of White Goods Loose and one for the national average price of White Goods Loose, were developed.

$$(17) \text{ Regional Average Price of White Goods (loose)} = 42.5 + 0time, R^2 = 1$$

(0)      (0)

$$(18) \text{ National Average Price of White Goods (loose)} = 42.5 + 0time, R^2 = 1$$

(0)      (0)

In both Equation 17 and Equation 18, price is regressed on time. Equation 17 predicts the regional average price of White Goods Loose and Equation 18 predicts the national average price of White Goods Loose. As Equation 17 demonstrates, the predicted regional price of White Goods Loose will remain unchanged in each subsequent time period and, as Equation 18 demonstrates, the predicted national price of White Goods Loose will also remain unchanged in each subsequent time period.

### 3.4 Historical and Current Prices for Recycled Paper

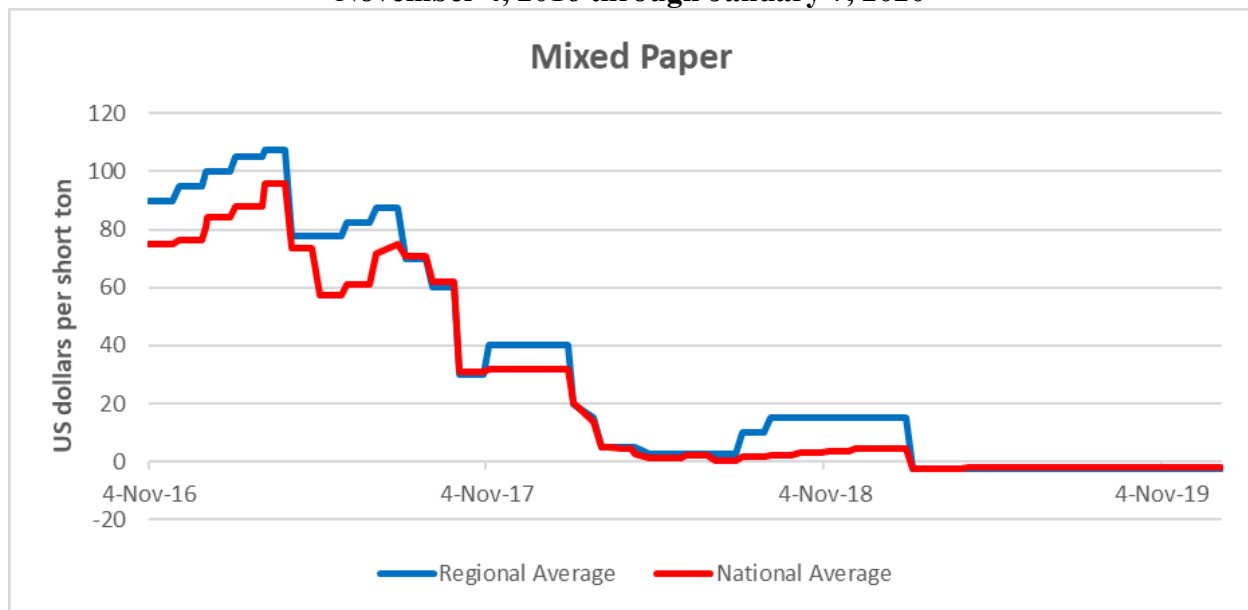
For the metals primary recycling commodity category, the commodities of Mixed Paper, Sorted Residential, Corrugated Containers, and Office Paper were examined and the resulting price models are presented in this sub-section.



### 3.4.a Mixed Paper

Figure 3.10 presents both the regional and national modeled analysis and changes in prices for Mixed Paper for the period between November 4, 2016 and January 7, 2020. The results are presented in U.S. dollars per short ton.

**Figure 3.10 – Regional and National Average Historical Prices of Mixed Paper  
November 4, 2016 through January 7, 2020**



Source: Regional and National Price Data, Mixed Paper, [www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Between November 4, 2016 and January 7, 2020, the average regional price of Mixed Paper decreased from an estimated \$90.00 per short ton on November 4, 2016 to an estimated -\$2.50 per short ton on January 7, 2020, a net decrease of \$92.50 per short ton or -101.0 percent. The average regional price per short ton for Mixed Paper over this nearly three year period was \$31.47 per short ton (with a reported standard deviation of \$33.84).

Over the same November 4, 2016 to January 7, 2020, the average national price of Mixed Paper decreased from an estimated \$75.00 per short ton on November 4, 2016 to an estimated -\$1.88 per short ton on January 7, 2020, a net decrease of \$76.88 per short ton or -102.5 percent. The average national price per short ton for Mixed Paper over this nearly three year period was \$25.77 per short ton (with a reported standard deviation of \$33.84).

Table 3.10 presents the estimated summary statistics, including the estimated total number of observations, the average, the standard deviation, the coefficient of variation, and the minimum and maximum for regional and national prices Mixed Paper for the trend lines presented in Figure 3.10 for Mixed Paper.

<b>Table 3.10 – Summary Descriptive Statistics Mixed Paper, Regional and National Price Data November 4, 2016 through January 7, 2020</b>						
<b>Variable</b>	<b>No. of Observations</b>	<b>Average</b>	<b>Standard Deviation</b>	<b>Coefficient of Variation</b>	<b>Minimum</b>	<b>Maximum</b>
Regional Average	85	31.47	38.72	123.03%	-2.5	107.5
National Average	85	25.77	33.84	131.27%	-2.5	95.94

Source: *Regional and National Price Data, Mixed Paper*, [www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Using the resulting summary descriptive statistics presented in Table 3.10, two separate regression models, one for the regional average price of Mixed Paper and one for the national average price of Mixed Paper, were developed.

$$(19) \text{ Regional Average Price of Mixed Paper} = 91.45 - 1.39\text{time}, R^2 = 0.791 \\ (3.902)^{***} (0.079)^{***}$$

$$(20) \text{ National Average Price of Mixed Paper} = 77.9 - 1.21\text{time}, R^2 = 0.782 \\ (3.482)^{***} (0.07)^{***}$$

In both Equation 19 and Equation 20, price is regressed on time. Equation 19 predicts the regional average price of Mixed Paper and Equation 20 predicts the national average price of Mixed Paper. As Equation 19 demonstrates, the predicted regional price of Mixed Paper will decrease by an estimated \$1.39 per short ton for each subsequent time period and, as Equation 20 demonstrates, the predicted national price of Mixed Paper will decrease by an estimated \$1.21 per short ton for each subsequent time period.

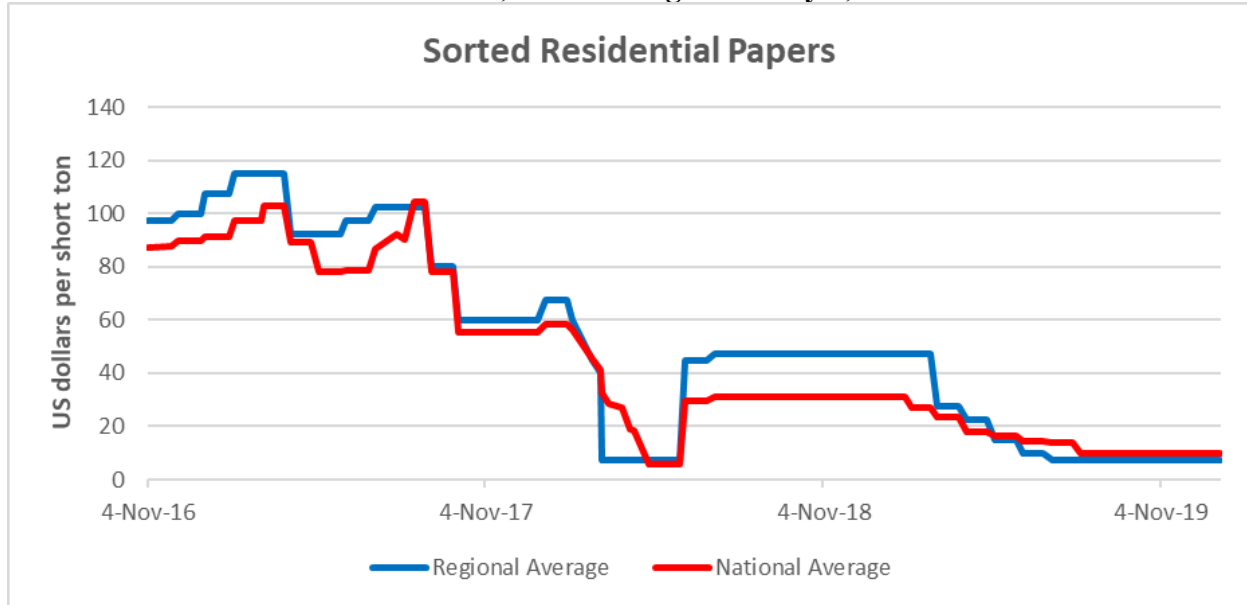
### 3.4.b Sorted Residential Paper

Figure 3.11 presents both the regional and national modeled analysis and changes in prices for Sorted Residential Paper for the period between November 4, 2016 and January 7, 2020. The results are presented in U.S. dollars per short ton.

Between November 4, 2016 and January 7, 2020, the average regional price of Sorted Residential Paper decreased from an estimated \$97.50 per short ton on November 4, 2016 to an estimated \$7.50 per short ton on January 7, 2020, a net decrease of \$90.00 per short ton or -92.3 percent. The average regional price per short ton for Sorted Residential Paper over this nearly three year period was \$51.09 per short ton (with a reported standard deviation of \$37.65).

Over the same nearly three year period, the average national price of Sorted Residential Paper decreased from an estimated \$87.19 per short ton on November 4, 2016 to an estimated \$10.00 per short ton on January 7, 2020, a net decrease of \$77.19 per short ton or -88.5 percent. The average national price per short ton for Sorted Residential Paper over this nearly three year period was \$45.11 per short ton (with a reported standard deviation of \$32.46).

**Figure 3.11 – Regional and National Average Historical Prices of Sorted Residential Paper  
November 4, 2016 through January 7, 2020**



Source: *Regional and National Price Data, Sorted Residential Paper*,  
[www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Table 3.11 presents the estimated summary statistics, including the estimated total number of observations, the average, the standard deviation, the coefficient of variation, and the minimum and maximum for regional and national prices Sorted Residential Paper for the trend lines presented in Figure 3.11.

Variable	No. of Observations	Average	Standard Deviation	Coefficient of Variation	Minimum	Maximum
Regional Average	85	51.09	37.65	73.70%	7.5	115
National Average	85	45.11	32.46	71.95%	5.94	104.38

Source: *Regional and National Price Data, Sorted Residential Paper*,  
[www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Using the resulting summary descriptive statistics presented in Table 3.11, two separate regression models, one for the regional average price of Sorted Residential Paper and one for the national average price of Sorted Residential Paper, were developed.

$$(21) \text{ Regional Average Price of Sorted Residential Paper} = 107.82 - 1.32\text{time}, \\ R^2 = 0.748 \\ (4.162)^{***} (0.084)^{***}$$

$$(22) \text{ National Average Price of Sorted Residential Paper} = 96.1 - 1.19\text{time},$$

$$R^2 = 0.813$$

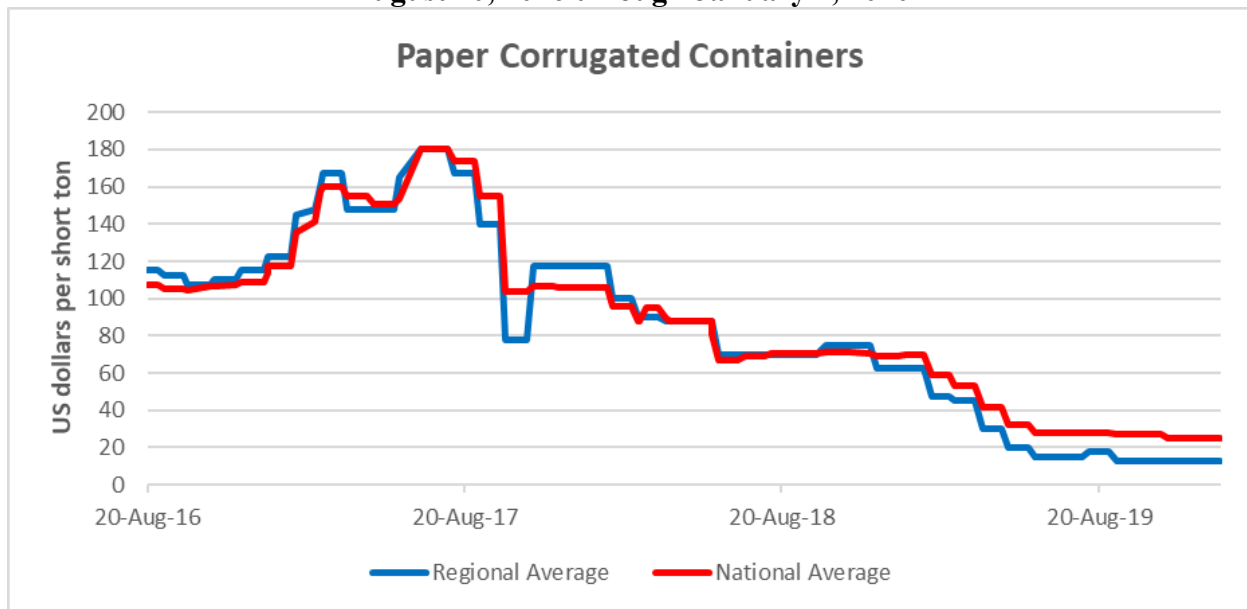
$$(3.091)^{***} (0.062)^{***}$$

In both Equation 21 and Equation 22, price is regressed on time. Equation 21 predicts the regional average price of Sorted Residential Paper and Equation 22 predicts the national average price of Sorted Residential Paper. As Equation 21 demonstrates, the predicted regional price of Sorted Residential Paper will decrease by an estimated \$1.32 per short ton for each subsequent time period and, as Equation 22 demonstrates, the predicted national price of Sorted Residential Paper will decrease by an estimated \$1.19 per sorted ton for each subsequent time period.

### 3.4.c Paper Corrugated Containers

Figure 3.12 presents both the regional and national modeled analysis and changes in prices for Paper Corrugated Containers for the period between August 20, 2016 and January 7, 2020. The results are presented in U.S. dollars per short ton.

**Figure 3.12 – Regional and National Average Historical Prices of Paper Corrugated Containers**  
August 20, 2016 through January 7, 2020



Source: *Regional and National Price Data, Paper Corrugated Containers*,  
[www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Between August 20, 2016 and January 7, 2020, the average regional price of Paper Corrugated Containers decreased from \$115.00 per short ton on August 20, 2016 to \$12.50 per short ton on January 7, 2020, a net decrease of \$102.50 per short ton or -89.1 percent. The average regional price per short ton for Paper Corrugated Containers over this nearly three and a half year period was \$86.95 per short ton (with a reported standard deviation of \$50.18).

Over the same nearly three and a half year period, the average national price of Paper Corrugated Containers decreased from an estimated \$107.19 per short ton on August 20, 2016 to an estimated \$25.00 per short ton on January 7, 2020, a net decrease of \$82.19 per short ton or -76.7 percent. The average national price per short ton for Paper Corrugated Containers over this nearly three and a half year period was \$89.45 per short ton (with a reported standard deviation of \$45.60).

Table 3.12 presents the estimated summary statistics, including the estimated total number of observations, the average, the standard deviation, the coefficient of variation, and the minimum and maximum for regional and national prices for Paper Corrugated Containers for the trend lines presented in Figure 3.12.

<b>Table 3.12 – Summary Descriptive Statistics</b> <b>Paper Corrugated Containers, Regional and National Price Data</b> <b>August 20, 2016 through January 7, 2020</b>						
<b>Variable</b>	<b>No. of Observations</b>	<b>Average</b>	<b>Standard Deviation</b>	<b>Coefficient of Variation</b>	<b>Minimum</b>	<b>Maximum</b>
Regional Average	91	86.95	50.18	57.71%	12.5	180
National Average	91	89.45	45.60	50.98%	24.69	180

Source: *Regional and National Price Data, Paper Corrugated Containers*,  
[www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Using the resulting summary descriptive statistics presented in Table 3.12, two separate regression models, one for the regional average price of Paper Corrugated Containers and one for the national average price of Paper Corrugated Containers, were developed.

$$(23) \text{ Regional Average Price of Paper Corrugated Containers} = 163.43 - 1.66time, \\ R^2 = 0.766 \quad (5.162)^{***} (0.097)^{***}$$

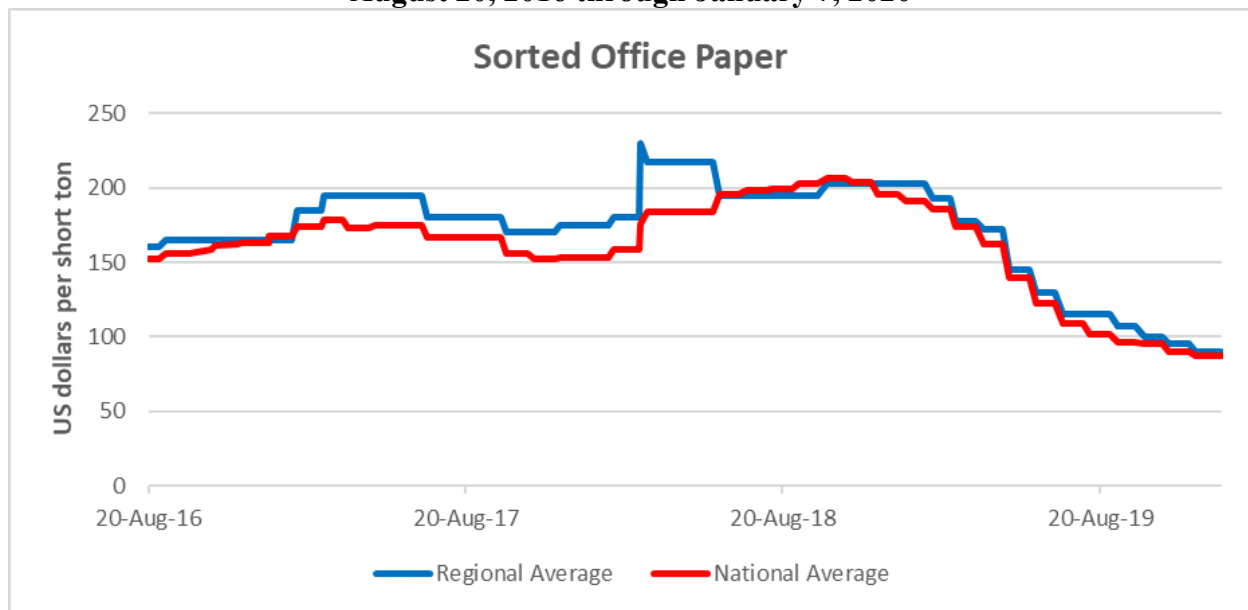
$$(24) \text{ National Average Price of Paper Corrugated Containers} = 156.57 - 1.46time, \\ R^2 = 0.715 \quad (5.179)^{***} (0.098)^{***}$$

In both Equation 23 and Equation 24, price is regressed on time. Equation 23 predicts the regional average price of Paper Corrugated Containers and Equation 24 predicts the national average price of Paper Corrugated Containers. As Equation 23 demonstrates, the predicted regional price of Paper Corrugated Containers will decrease by an estimated \$1.66 per short ton for each subsequent time period and, as Equation 24 demonstrates, the predicted national price of Paper Corrugated Containers will decrease by an estimated \$1.46 per sorted ton for each subsequent time period.

### 3.4.d Sorted Office Paper

Figure 3.13 presents both the regional and national modeled analysis and changes in prices for Sorted Office Paper for the period between August 20, 2016 and January 7, 2020. The results are presented in U.S. dollars per short ton.

**Figure 3.13 – Regional and National Average Historical Prices of Sorted Office Paper  
August 20, 2016 through January 7, 2020**



Source: *Regional and National Price Data, Sorted Office Paper*,  
[www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Between August 20, 2016 and January 7, 2020, the average regional price of Sorted Office Paper decreased from an estimated \$160.00 per short ton on August 20, 2016 to an estimated \$90.00 per short ton on January 7, 2020, a net decrease of \$70.00 per short ton or -43.8 percent. The average regional price per short ton for Sorted Office Paper over this nearly three and a half year period was \$171.87 per short ton (with a reported standard deviation of \$33.02).

Over the same nearly three and a half year period, the average national price of Sorted Office Paper decreased from an estimated \$152.19 per short ton on August 20, 2016 to an estimated \$86.88 per short ton on January 7, 2020, a net decrease of \$65.31 per short ton or -42.9 percent. The average national price per short ton for Sorted Office Paper over this nearly three and a half year period was \$160.41 per short ton (with a reported standard deviation of \$33.02).

Table 3.13 presents the estimated summary statistics, including the estimated total number of observations, the average, the standard deviation, the coefficient of variation, and the minimum and maximum for regional and national prices for Sorted Office Paper for the trend lines presented in Figure 3.13.

<b>Table 3.13 – Summary Descriptive Statistics Sorted Office Paper, Regional and National Price Data August 20, 2016 through January 7, 2020</b>						
<b>Variable</b>	<b>No. of Observations</b>	<b>Average</b>	<b>Standard Deviation</b>	<b>Coefficient of Variation</b>	<b>Minimum</b>	<b>Maximum</b>
Regional Average	91	86.95	50.18	57.71%	12.5	180
National Average	91	89.45	45.60	50.98%	24.69	180

Source: *Regional and National Price Data, Sorted Office Paper*,  
[www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Using the resulting summary descriptive statistics presented in Table 3.13, two separate regression models, one for the regional average price of Sorted Office Paper and one for the national average price of Sorted Office Paper, were developed.

$$(25) \text{ Regional Average Price of Sorted Office Paper} = 199.65 - 0.60\text{time}, R^2 = 0.201 \\ (6.77)^{***} (0.128)^{***}$$

$$(26) \text{ National Average Price of Sorted Office Paper} = 184.3 - 0.52\text{time}, R^2 = 0.173 \\ (6.385)^{***} (0.121)^{***}$$

In both Equation 25 and Equation 26, price is regressed on time. Equation 25 predicts the regional average price of Sorted Office Paper and Equation 26 predicts the national average price of Sorted Office Paper. As Equation 25 demonstrates, the predicted regional price of Sorted Office Paper will decrease by an estimated \$0.60 per short ton for each subsequent time period and, as Equation 26 demonstrates, the predicted national price of Sorted Office Paper will decrease by an estimated \$0.52 per sorted ton for each subsequent time period.

### 3.5 Historical and Predicated Future Prices for Recycled Plastics, Metals, and Paper Summarized

A summary of the 13 separate finished recycled commodities for each of the three primary categories, plastics, metals, and paper, is presented in this sub-section.

#### 3.5.a Historical and Predicted Future Prices for Recycled Plastics

Table 3.14 presents a general summary for the historical regional and national average prices and for the predicted regional and national average future prices for the three commodities of recycled plastics, including Polyethylene Terephthalate (PET) Baled, Natural High Density Polyethylene (HDPE), and Colored High Density Polyethylene (HDPE). The estimated historical actual change, the estimated historical percentage change, and the predicted increase or decrease in regional and national prices based upon the completed regression estimates for each

individual recycled plastic commodities are presented. Those individual recycled plastic commodities with predicated future increases are highlighted.

<b>Table 3.14 – Recycled Plastics Summarized Historical and Predicted Future Prices</b>			
<b>Commodity</b>	<b>Historical Actual Change</b>	<b>Historical Percentage Change</b>	<b>Predicated Future Actual Change</b>
<b>PET Baled</b>			
Regional	-\$0.0907 per pound	-51.6%	-\$0.0001 per pound
National	-\$0.0154 per pound	-14.2%	-\$0.0003 per pound
<b>Natural HDPE</b>			
Regional	\$0.3200 per pound	133.3%	\$0.0005 per pound
National	\$0.3253 per pound	120.8%	\$0.0005 per pound
<b>Colored HDPE</b>			
Regional	\$0.0000 per pound	0.0%	-\$0.0001 per pound
National	-\$0.0247	-16.5%	-\$0.0002 per pound

Of the three separate recycled plastics commodities analyzed, only the average regional price for Natural HDPE plastics and the average national price for Natural HDPE plastics is predicted to increase, with the average regional price and the average national price of Natural HDPE plastics increasing only slightly by just \$0.0005 per pound. The average regional price and the average national price for PET Baled plastics are predicted to decline, by \$0.0001 per pound and \$0.0003 per pound respectively. The average regional price and the average national price for Colored HDPE plastics are also predicted to decline, by \$0.0001 per pound and by \$0.0002 per pound respectively. Based on just the historical changes and the predicated future change in regional and national prices, there does not appear to be enough appreciable growth in the recycled plastics regional and national markets to support a recycling industry in Northeastern Nevada at the time of publication of this University Center for Economic Development technical report.

### 3.5.b Historical and Predicted Future Prices for Recycled Metals

Table 3.15 presents a general summary for the historical regional and national average prices and for the predicted regional and national average future prices for the six commodities of recycled metals, including Aluminum Cans Sorted, Aluminum Cans Loose, Steel Cans Sorted Baled, Steel Cans Sorted Densified, Steel Cans Loose, and White Goods Loose. The estimated historical actual change, the estimated historical percentage change, and the predicted increase or decrease in regional and national prices based upon the completed regression estimates for each individual recycled metal commodities are presented. Those individual recycled metal commodities with predicated future increases are highlighted.



<b>Table 3.15 – Recycled Metals Summarized Historical and Predicted Future Prices</b>			
<b>Commodity</b>	<b>Historical Actual Change</b>	<b>Historical Percentage Change</b>	<b>Predicated Future Actual Change</b>
<b>Aluminum Cans Sorted</b>			
Regional	-\$0.0591 per pound	-9.8%	-\$0.0004 per pound
National	-\$0.0462 per pound	-8.3%	-\$0.0004 per pound
<b>Aluminum Cans Loose</b>			
Regional	\$0.00 per pound	0.0%	\$0.00 per pound
National	\$0.0081 per pound	3.4%	-\$0.0007 per pound
<b>Steel Cans Sorted Baled</b>			
Regional	\$45.00 per ton	78.3%	\$0.11 per ton
National	-\$12.82 per ton	-11.1%	-\$0.02 per ton
<b>Steel Cans Sorted Densified</b>			
Regional	\$0.00 per ton	0.0%	\$0.00 per ton
National	-\$18.67 per ton	-45.5%	-\$0.04 per ton
<b>Steel Cans Loose</b>			
Regional	\$0.00 per ton	0.0%	\$0.00 per ton
National	-\$7.35 per ton	-40.4%	-\$0.01 per ton
<b>White Goods Loose</b>			
Regional	\$0.00 per ton	0.0%	\$0.00 per ton
National	\$0.00 per ton	0.0%	\$0.00 per ton

Of the six separate recycled metal commodities analyzed, only the average regional price for Steel Cans Sorted Baled is predicted to increase, with the average regional price for Steel Cans Sorted Baled expected to increase slightly by \$0.11 per ton. However, the average national price for Steel Cans Sorted Baled is predicted to decrease, decreasing by an anticipated \$0.02 per ton. Comparatively, the average regional and average national prices for Aluminum Cans Sorted are predicted to decline, each by an estimated \$0.0004 per pound. The estimated average regional price for Aluminum Cans Loose is expected to remain unchanged and the estimated average national price for Aluminum Cans Loose is expected to decline slightly by \$0.0007 per pound. The estimated regional average price for Steel Cans Sorted Densified is expected to remain unchanged and the estimated national average price for Steel Cans Sorted Densified is expected to decline by an estimated \$0.04 per ton. The estimated regional price for Steel Cans Loose is

expected to remain unchanged and the estimated national average price for Steel Cans Loose is expected to decline by an estimated \$0.01 per ton. The estimated regional average price and the estimated national average price for White Goods Loose are both expected to remain unchanged. Based on just the historical changes and the predicated future change in regional and national prices, there does not appear to be enough appreciable growth in the recycled metals regional and national markets to support a recycling industry in Northeastern Nevada at the time of publication of this University Center for Economic Development technical report.

### 3.5.c Historical and Predicted Future Prices for Recycled Paper

Table 3.16 presents a general summary for the historical regional and national average prices and for the predicted regional and national average future prices for the four commodities of recycled paper, including Mixed Paper, Sorted Residential, Corrugated Containers, and Office Paper. The estimated historical actual change, the estimated historical percentage change, and the predicted increase or decrease in regional and national prices based upon the completed regression estimates for each individual recycled paper commodity are presented. Those individual recycled metal commodities with predicated future increases are highlighted.

<b>Table 3.16 – Recycled Paper Summarized Historical and Predicted Future Prices</b>			
<b>Commodity</b>	<b>Historical Actual Change</b>	<b>Historical Percentage Change</b>	<b>Predicated Future Actual Change</b>
<b>Mixed Paper</b>			
Regional	-\$92.50 per ton	-101.0%	-\$1.39 per ton
National	-\$76.88 per ton	-102.5%	-\$1.21 per ton
<b>Sorted Residential Paper</b>			
Regional	-\$90.00 per short ton	-92.3%	-\$1.32 per short ton
National	-\$77.19 per short ton	-88.5%	-\$1.19 per short ton
<b>Paper Corrugated Containers</b>			
Regional	-\$102.50 per short ton	-89.1%	-\$1.66 per short ton
National	-\$82.19 per short ton	-76.7%	-\$1.46 per short ton
<b>Sorted Office Paper</b>			
Regional	-\$70.00 per short ton	-43.8%	-\$0.60 per short ton
National	-\$65.31 per short ton	-42.9%	-\$0.52 per short ton

Of the four separate recycled paper commodities analyzed, none of the average regional prices and none of the average national prices were predicted to increase. The average regional price and the average national price for Mixed Paper are predicted to decline, declining by an

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estimated \$1.39 per ton and by an estimated \$1.21 per ton respectively. The average regional price and the average national price for Sorted Residential Paper are predicted to decline, declining by an estimated \$1.32 per short ton and by an estimated \$1.19 per short ton respectively. The average regional price and the average national price for Paper Corrugated Containers are predicted to decline, declining by an estimated \$1.66 per short ton and by an estimated \$1.46 per short ton respectively and the average regional price and the average national price for Sorted Office Paper are also predicted to decline, declining by an estimated \$0.60 per short ton and by an estimated \$0.52 per short ton respectively. Based on just the historical changes and the predicated future change in regional and national prices, there does not appear to be enough appreciable growth in the recycled paper regional and national markets to support a recycling industry in Northeastern Nevada at the time of publication of this University Center for Economic Development technical report.

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## 4.0 Market Demand and Use of Recycled Materials from Waste Generated in Northeastern Nevada

Despite significant technological improvements and improvements in the processing and production of recycled commodities, the potential use of recycled commodities in component parts or finished products have remained relatively limited. This limitation in the use of recycled commodities in component parts or finished products has been generally attributed to significantly falling prices of recycled commodities (detailed in Section 3.0 of this University Center for Economic Development technical report). This section presents a general overview of the primary ways in which recycled commodities have been used in component parts or finished products. While there is a significant variety of end uses for recycled commodities, this section focuses on the primary ways in which specific recycled commodities, generated from the Northeastern Nevada region, could potentially be used. The potential uses outlined in this section are sorted by primary recycling category and the individual recycling commodities for each primary category as outlined previously in Section 3.0.

### 4.1 Uses for Recycled Plastics

The potential uses of Polyethylene Terephthalate (PET) Baled, Natural High Density Polyethylene (HDPE), and Colored High Density Polyethylene (HDPE) were examined individually for the plastics category. The most common individual component parts, materials and finished goods for PET Baled plastics is presented separately and the most common individual components parts, materials and finished goods for both Natural HDPE plastics and Colored HDPE plastics are presented together.

#### 4.1.a Uses of PET Baled Plastics

PET Baled plastics, in their non-recycled form, carry the number “1” symbol stamped or printed on the bottom of the plastic container using PET Baled plastics. PET Baled plastics is primarily recycled into new PET plastic containers due to its generally lighter weight and relatively more affordable cost when compared to both Natural HDPE plastics and Colored HDPE plastics. These characteristics have generally limited the use of PET Baled recycled plastics in the manufacturing, production and use of new component parts, materials and finished products.

However, in addition to its use in the production of new PET plastic containers, new manufacturing processes have expanded the overall use of PET Baled recycled plastics in component parts, materials and finished products. With increasing commonality, PET Baled recycled plastics are used in the manufacturing of the following additional items:

- Athletic Shoes
- Automotive Parts

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- Fabric Uses in T-Shirt Production
  - Industrial Strapping
  - Luggage and Upholstery
  - Plastic Sheeting and Film Production
  - Production of Long Underwear
  - Polyester Carpet Fiber
  - Sweaters and Fiberfill for Sleeping Bags and Winter Coats

Use of PET Baled recycled plastics has grown throughout a number of various industry sectors and continued use of PET Baled recycled plastics in the production of component parts, materials and finished goods is likely to increase as individual firms expand internal supply chain recycling and their corporate social responsibility programs in response to increased government regulations requiring higher percentage uses of recycled materials in the production of component parts, materials and finished goods and as individual end-use consumer preferences become increasingly insistent that and comfortable with PET Baled recycled plastics being used in the production of end-use consumer goods.

#### 4.1.b Uses of Natural HDPE and Colored HDPE Plastics

Both Natural HDPE and Colored HDPE plastics, in their non-recycled form, carry the number “2” stamped or printed on the bottom of the plastic container using both Natural HDPE and Colored HDPE plastics. Both Natural HDPE and Colored HDPE plastics have higher densities than that of PET Baled plastics, making recycled Natural HDPE and Colored HDPE plastics more suitable for component parts, materials and finished products that require more durability. This higher density, however, often means that the recycling process of Natural HDPE and Colored HDPE plastics requires specialized processing that tends to drive up the cost of both recycled Natural HDPE plastics and Colored HDPE plastics which, in-turn, drives up the cost of the component parts, materials and finished products that contained recycled Natural HDPE and Colored HDPE plastics.

Despite the relatively involved process and higher costs associated with recycled Natural HDPE and Colored HDPE plastics, individual firms and manufactures have begun the process of expanding the overall use of Natural HDPE and Colored HDPE recycled plastics in component parts, materials and finished products. With increasing commonality, Natural HDPE and Colored HDPE recycled plastics are used in the manufacturing of the following additional items:

- Crates for Shipping or Retail Display
- Floor Tiles
- Hardscape Materials (for example, Flowerpots and Gardening Tools)
- Non-Food Bottles and Plastic Containers (for example, Anti-Freeze, Motor Oil, Laundry Cleaners, Various Cleaning Products, Conditioner and Shampoo Products)
- Pipes
- Plastic Lumber (used in Playground Equipment, Outdoor Picnic Tables, and Outdoor Patio Decking Materials)
- Plastic Sheeting and Film Production
- Recycling Bins

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Similar to the increased use of PET Baled recycled plastics, the use of both Natural HDPE and Colored HDPE recycled plastics has grown throughout a number of various industry sectors and continued use of Natural HDPE and Colored HDPE recycled plastics in the production of component parts, materials and finished goods is likely to increase as individual firms further expand internal supply chain recycling and their corporate social responsibility programs in response to increased government regulations requiring higher percentage uses of recycled materials in the production of component parts, materials and finished goods and as individual end-use consumer preferences become increasingly insistent that and comfortable with Natural HDPE and Colored HDPE recycled plastics being used in the production of end-use consumer goods.

## **4.2 Uses for Recycled Metals**

The potential uses of Aluminum Cans Sorted, Aluminum Cans Loose, Steel Cans Sorted Baled, Steel Cans Sorted Densified, Steel Cans Loose, and White Goods Loose (discarded household appliances) recycled metals were each examined individually for the metals category. The most common component parts, materials and finished goods for Aluminum Cans Sorted and Aluminum Cans Loose were examined together and the most common component parts, materials and finished goods for Steel Cans Sorted Baled, Steel Cans Sorted Densified, and Steel Cans Loose were also examined together. The potential uses of recycled White Goods Loose are examined separately.

### **4.2.a Uses of Aluminum Cans Sorted and Aluminum Cans Loose**

The use of recycled Aluminum Cans Sorted and Aluminum Cans Loose has largely been limited to the production of new aluminum cans. While automobile manufacturers have continued to explore the use of recycled aluminum in the production of automobile body component parts, the overall strength and utility of aluminum used in various cans decreases significantly during the recycling process and further decreases after each iteration of the recycling process. This limitation on the overall strength and utility of recycled aluminum, using current recycling processes, has generally limited the overall use of recycled aluminum in new component parts, materials and finished goods that require relatively high levels of strength and durability.

Another primary drawback of using recycled aluminum is the typical requirement that used Aluminum Cans Sorted and used Aluminum Cans Loose must be separated from steel, plastic, and other industrial or municipal waste. This initial sorting process is often labor intensive and drives up the eventual price of finished component parts, materials and finished goods which, in turn, makes the use of recycled Aluminum Cans Sorted and recycled Aluminum Cans Loose largely financially and economically unviable in further downstream supply chain manufacturing and production processes. Unlike increased consumer support for the use of recycled PET Baled plastics and recycled Natural HDPE and Colored HDPE plastics, consumers have generally not supported increased costs of finished end-user goods resulting from the use of recycled Aluminum Cans Sorted and used Aluminum Cans Loose.

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#### 4.2.b Uses of Steel Cans Sorted Baled, Steel Cans Sorted Densified, and Steel Cans Loose

The various uses of recycled Steel Cans Sorted Baled, Steel Cans Sorted Densified, and Steel Cans Loose is significantly greater and more diverse than the potential uses of recycled Aluminum Cans Sorted and recycled Aluminum Cans Loose. This is largely due to the fact that steel can be recycled an infinite number of times without losing its overall strength and durability and the process of recycling steel carries a significantly lower labor cost. Rising steel prices in the United States and across global industrial markets due to rising protectionist trade policies have also made the use of recycled steel in new component parts, materials and finished products increasingly affordable and cost effective.

As a result of the physical properties of recycled steel and the overall cost effectiveness of using recycled steel, individual firms and manufacturers have continued to expand the overall use of recycled Steel Cans Sorted Baled, Steel Cans Sorted Densified, and Steel Cans Loose in the production of a wide variety of component parts, materials and finished products ranging from relatively trivial consumer goods to large-scale industrial and finished good products. With increasing commonality, recycled Steel Cans Sorted Baled, Steel Cans Sorted Densified, and Steel Cans Loose are specifically used in the manufacturing of the following additional items:

- Automobiles
- Bicycle Frames
- Bridges
- Food and Drink Cans
- Paperclips
- Ship Hulls
- Steel Pipes
- Train Tracks

While at least some recycled steel is certainly used in almost any component part, material or finished good that requires the use of steel, the production of automobiles, bicycle frames, bridges, food and drink cans, paperclips, ship hulls, steel pipes, and train tracks especially have seen increased quantities of steel acquired through the specific recycling of Steel Cans Sorted Baled, Steel Cans Sorted Densified, and Steel Cans Loose over the past several decades. The relatively high amount of availability of these sources of steel, along with the ability to recycle steel without compromising its underlying strength and the general increase in raw steel national and global prices, have made these specific sources of recycled steel ideal for the production of the above listed component parts, materials and finished products.

#### 4.2.c Uses of White Goods Loose (Discarded Household Appliances)

Including discarded dishwashers, refrigerators, stovetop ranges, clothes washers and dryers, and other discarded household appliances, the use of recycled White Goods Loose typically involves the dismantling and subsequent recovery, sorting and recycling of individual component metals, plastics and other component materials. The final recovery, sorting and recycling of these various component parts can then be used in other recycling processes and the underlying component recycled materials and commodities are further processed and used in the production

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of eventual component parts, materials and finished goods including the already identified uses of recycled plastic materials and recycled metal materials.

A primary concern regarding the overall market and economic feasibility of utilizing recycled components of White Goods Loose is the high amount of labor used in the recycling of White Goods Loose and the subsequently high labor costs. In addition to the individual dismantlement of the individual discarded household appliance required to separate the various component plastic and metal materials, individual White Goods Loose items may also contain hazardous and potentially dangerous materials that require specialized handling and long-term disposal and storage. These conditions subsequently increase the overall cost of recycling White Goods Loose and the continued decline in the prices for finished recycled plastic and metal commodities have increasingly driven down the overall market and economic feasibility of using the collected recycled commodities from White Goods Loose items in the further downstream production of component parts, materials and finished goods.

### **4.3 Uses for Recycled Paper**

The potential uses of Mixed Paper, Sorted Residential Paper, Paper Corrugated Containers, and Sorted Office Paper were each examined separately. Despite the significant decline in the price of recycled Mixed Paper, Sorted Residential Paper, Paper Corrugated Containers, and Sorted Office Paper over the last several years in both regional and national markets, the use of recycled paper in component parts, materials and finished goods have increased significantly for each of these four recycled paper commodities. However, the various new component parts, materials and finished goods that have used these four recycled paper commodities are of generally low value and generate, on a per unit produced and sold basis, little income for the producer or manufacturer.

#### **4.3.a Uses of Mixed Paper**

The use of recycled Mixed Paper spans a variety of component parts, materials and finished goods as the paper recycling industry has become increasingly efficient. Component parts, materials and finished goods that most commonly use recycled Mixed Paper in the United States include:

- New Paperboard
- Paper Backing of Roof Shingles used in Residential Building Construction
- Paper Bathroom Tissue and Paper Towel Rolls

Similar to growing government regulation requiring minimal levels of recycled plastics in the production of new component parts, materials and finished products and to the growing expectation recycled plastics be used in the production of new component parts, materials and finished products by individual consumers, the use of Mixed Paper in the production of new paperboard, new paper backing of roof shingles, and new paper bathroom tissue and paper towel rolls has increased significantly over the past few decades due to similar governmental regulations and consumer preferences. The largely mature Mixed Paper recycling process has



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also created significant economies of scale for individual manufacturers that make the use of recycled Mixed Paper in these specific finished goods increasingly economically feasible.

#### 4.3.b Uses of Sorted Residential Paper

The uses of Sorted Residential Paper in the production of new component parts, materials and finished products is significantly more varied than the uses of recycled Mixed Paper, recycled Paper Corrugated Containers, and recycled Sorted Office Paper. Component parts, materials and finished goods that most commonly use recycled Sorted Residential Paper in the United States include:

- Berry Boxes (for both Display and Consumer Consumption)
- Building Insulation
- Construction Paper
- Countertops
- Egg Cartons
- Kitty Litter
- Newspaper
- Paperboard
- Paper Plates
- Sheetrock
- Telephone Directories

Again, due to growing government regulation requiring minimal levels of recycled paper in the production of new component parts, materials and finished products coupled with the growing expectation that recycled paper be used in the production of new component parts, materials and finished products by individual consumers, the use of Sorted Residential Paper in the production of various new component parts, materials and finished products has increased significantly over the past few decades. Similar to the relatively mature recycling processes of other types of discarded paper, the relatively mature Sorted Residential Paper recycling process has created significant economies of scale for individual manufacturers that ultimately make the use of recycled Sorted Residential Paper in various component parts, materials and finished goods increasingly economically feasible.

#### 4.3.c Uses of Paper Corrugated Containers

The unique characteristics of recycled Paper Corrugated Containers has generally limited the use of this specific recycled commodity in the production of new component parts, materials and finished goods. Relative to Mixed Paper sources, Sorted Residential Paper, and Sorted Office Paper, the overall amount of recycled Paper Corrugated Containers is relatively limited and collection and recycling processes are somewhat specialized. Component parts, materials and finished goods that most commonly use recycled Paper Corrugated Containers in the United States include:

- New Cardboard and Cardboard Containers
- Paper Bags

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- Paperboard
  - Various New Cardboard Mediums (Boxes and other Packaging Products)

While additional specialized labor and specialized recycled processes are required to recycle used Paper Corrugated Containers, the use of recycled Paper Corrugated Containers in new component parts, materials and finished products has begun to increase in recent years. Improvements in the recycling process of Paper Corrugated Containers, additional increased government regulation regarding the component levels of recycled materials, and increased consumer expectation have each driven new expanded uses of recycled Paper Corrugated Container materials in new component parts, materials and finished goods. Individual recyclers of Paper Corrugated Containers have also seen recent improvements in their individual economies of scale largely due to recent improvements being made in the recycling process of Paper Corrugated Containers and, as a result of these improved economies of scale, have begun to find new economically feasible ways to use recycled Paper Corrugated Containers in the production of new component parts, materials and finished goods.

#### 4.3.d Use of Sorted Office Paper

The uses of Sorted Office Paper in the production of new component parts, materials and finished products is significantly more varied than the uses of recycled Mixed Paper and recycled Paper Corrugated Containers but slightly less varied than the uses of Sorted Residential Paper in the production of new component parts, materials and finished products. Component parts, materials and finished goods that most commonly use recycled Sorted Office Paper in the United States include:

- Bathroom Tissue
- Computer and Printing Paper
- Facial Tissue
- Notebook Paper
- Paper Napkins
- Paper Towels

Increased government regulation requiring the use of recycled paper in the production of these new component parts, materials and finished goods, and increased individual consumer expectation that and acceptance of recycled paper will be used in these new component parts, materials and finished goods, has steadily increased the overall usage of recycled Sorted Office Paper in the production of new bathroom tissue, computer and printing paper, facial tissue, notebook paper, paper napkins, and paper towels. Similar to the recycling of Mixed Paper and Sorted Residential Paper, a fairly mature Sorted Office Paper recycling process has created significant economies of scale for individual manufacturers that, ultimately, make the use of recycled Sorted Office Paper in these specific finished goods increasingly economically feasible despite a relatively low per unit value and per unit of revenue generated from sales for these new component parts, materials and finished goods.

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## 4.4 Uses for Recycled Glass and Rubber

While various uses for varied recycled glass commodities and recycled rubber commodities do presently exist, the overall market and economic feasibility of glass and rubber recycling is difficult to accurately estimate given the general lack of historical regional and national market price data for each recycled commodity. However, despite the uncertainty in market price data, the production of discarded glass and rubber, from both industrial waste sources and municipal solid waste sources, in Northeastern Nevada could potentially be used in the production of new component parts, materials and finished goods. This subsection looks at the potential uses of discarded and then recycled glass and rubber commodities.

### 4.4.a Uses of Recycled Glass

According to the Glass Packaging Institute, originally founded in 1919 as the Glass Container of Association of America, the general properties of glass materials makes it an excellent source of recycled commodities that can be used in the further production of new component parts, materials and finished goods. Glass is 100 percent recyclable and, unlike other recyclable commodities, can endlessly be recycled without any loss in the quality or purity of the glass itself. In 2017 alone, according to the Glass Packaging Institute, approximately 40.0 percent of glass beer and soft drink bottles, approximately 40.0 percent of glass wine and liquor bottles, approximately 15.0 percent of food jars, and approximately 34.0 percent of all other glass container types were recycled in the United States. In certain states, like the state of California that has significantly stricter recycling regulatory requirements and significantly more developed recycling financial incentives, even greater overall percentages of used glass beer and soft drink bottles, glass wine and liquor bottles, foods jars, and other glass container types are recycled. Throughout the United States, various recycled glass commodities are increasingly used in the manufacturing and production of the following items:

- Agriculture and Landscape Applications (Top Dressing, Root Zone Materials, Bunker Sand for Golf Courses)
- Astroturf
- Ceramic Sanitary Ware Production
- Fiberglass Installation Products
- Flux in the Production of Bricks (Construction)
- Glass Containers
- Glass Countertops
- Various Abrasives
- Water Filtration Media

Despite the varied use of recycled glass commodities from various food and beverage glass containers in the production of new component parts, materials and finished goods, largely due the underlying characteristics of these specific recycled glass commodities, the use of disposed glass collected from discarded windows, ovenware, Pyrex and crystal has been limited due to the specific characteristics of these types of glass. Overall, the limitation of using discarded food and beverage glass containers in the production of new component parts, materials and finished goods has, to a degree, limited the overall market and economic feasibility of wide-spread glass

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recycling operations. Successful glass recycling industries have largely been limited to specific geographic locations (municipalities or mid-sized regions) where single-stream recycling is most efficient (the ability to sort out discarded glass from other waste products) or targeted financial incentives, such as the use of deposits on disposable food and beverage glass containers, can be employed. The use of single-stream recycling and financial incentives to encourage the recycling of food and beverage glass containers typically, however, works best in relatively high-density large population centers. The use of financial incentives, in particular, will typically require government investment at either the local or state government level. This has resulted in further limiting the development of wide-spread glass recycling operations.

#### 4.4.b Uses of Recycled Rubber

According to the Institute of Scrap Recycling Industries Inc., a Washington, D.C. based advocacy organization, recycled rubber commodities have been used and continued to be used in a wide variety of applications and in the production of various new component parts, materials and finished goods. Specifically, discarded tires and the recycled rubber commodities that can be produced from discarded rubber tires have been used in a number of industry sectors to produce the following list of new component parts, materials and finished goods:

- Agriculture: Bumpers, Feeders, Livestock Mats, Sheds, and Vegetation Protectors and Windbreaks
- Home and Garden: Benches, Flowerpots, Garden Hoses, Landscaping Mulch, Molded Products (for example, Railroad Ties), and Door Mats.
- Infrastructure: Rubberized Asphalt for Roadway Construction and Maintenance
- Medical: Hospital Floor Surfaces and Tiles
- Playground Surfaces: Mats and Mulch
- Sports: Fitness Mats, Indoor and Outdoor Running Tracks, and Infill for Synthetic Turf Fields

Despite the historical use of recycled rubber commodities in the production of new component parts, materials and finished goods and the overall development of rubber recycling processes in the United States for over the last century, the market for recycled rubber commodities has increased significantly over just the past few decades. Recent rising prices and increased scarcity for raw natural resources for the production of rubber-based component parts, materials and finished products has helped spur this recent growth in the market for recycled rubber commodities. Increased government regulation regarding the disposal of used rubber tires (primarily automobile tires for individual consumer, commercial and industrial uses) and the mandate to recycle disposed of and used rubber tires has also significantly increased the use of recycled rubber commodities in a variety of innovative production processes.

In the United States, most recycled rubber commodities come from the recycling of disposed of and used rubber tires that, again, are generated primarily from discarded and used rubber automobile tires for individual consumer, commercial and industrial uses. The process by which discarded and used rubber is recycled employs two main approaches. First, through ambient shredding, powerful and interlocking knives are used to shred the discarded and used rubber tires into smaller pieces that can be further refined and processed to produce recycled rubber

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commodities that can then be used in the production of new component parts, materials and finished goods. Second, by using a cryogenic process, liquid nitrogen is used to freeze the discarded and used rubber tires to sub-zero temperatures. The frozen tires become extremely brittle and the tire is then placed in an enclosure where they are smashed into smaller pieces for future recycling.

Both the ambient shredding approach and the cryogenic approach to recycling discarded and used rubber tires do not change the chemical composition and make-up of the rubber used in the discarded and used rubber tire. Both approaches also facilitate the removal of non-rubber materials added to the rubber tire at the time of the rubber tire's initial production. Added plastic and metal (mostly steel) materials can be safely and efficiently extracted using both approaches and these added plastic and metal materials can be further recycled and used in the production of other new component parts, materials and finished goods that utilize recycled plastic and metal commodities. The resulting recycled rubber commodities can then be further processed and used in the production of various new component parts, materials and finished goods produced in a variety of industry and commercial sectors.

Similar, however, to the limitations on the wide-spread adoption and use of glass recycling processes, the overall process of recycling rubber and, primarily, discarded and used tires works most efficiently in high-density large population centers. This is mostly due to the specialized recycling process of collected and disposed of rubber and the need for large quantities of collected and disposed of rubber to support these recycling processes. The transportation costs associated with transporting discarded and used rubber tires as well as the finished recycled rubber commodities to and from a centralized rubber recycling facility typically exceed the anticipated revenue that can be earned from the recycled rubber commodities itself. Relatively short transportation distances of both the input (the discarded and used rubber tires) and the output (the finished recycled rubber commodity) from the source and to the end user is typically needed to improve the overall economic feasibility of any rubber recycling process.

Furthermore, single-stream recycling of discarded and used rubber tires have proved largely ineffective and infeasible in the rare instances that single-stream recycling processes in which discarded and used rubber tires have been included in. The development and employment of strict government regulations that control and require the disposal of discarded and used rubber tires with the included use of 'reverse' financial incentives, where the individual user of the now discarded and used rubber tire is required to pay a recycling or disposal fee, are often both needed in tandem to support the recycling and proper and safe disposal of discarded and used rubber tires.

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## **5.0 Outline and Overview of a Recycling Industry in Northeastern Nevada**

At the time of publication of this University Center for Economic Development technical report, strictly private-sector based recycling of various industrial waste materials and municipal waste materials within the Northeastern Nevada region is neither technically or economically feasible. The current amount of industrial waste materials and municipal waste materials generated within the Northeastern Nevada region is not sufficient to provide high enough quantities to support wide-scale recycling within the region and current regional and national prices of various recycled commodities, including the prices for plastic, metal and paper recycled commodities, are too low to support profitable wide-scale private-sector recycling. However, the continued economic and population growth of the region, combined with the continued expanded use of recycled commodities in the production of various new component parts, materials and finished goods, indicates that a private-sector based recycling industry in Northeastern Nevada may be feasible in the future. In the meantime, public-sector support of a new recycling industry in Northeastern Nevada will be needed.

This section presents an overview of several recycling programs created and initially managed by a public-sector entity or organization that could either be employed in Northeastern Nevada or modeled to develop a future recycling industry for the region. Two programs piloted by the Nevada Division of Environmental Protection, including a new hub and spoke rural recycling program and a new rural landfill reduction, diversion, and household hazardous waste collection program, are first presented. Details of the Pennsylvania Recycling Markets Center, the New Mexico Rubberized Asphalt Concrete Pavements Program, and the New Mexico Tire-Bale Erosion Control and Bank Stabilization Program are also presented in this section.

### **5.1 Nevada Division of Environmental Protection Hub and Spoke Rural Recycling Program**

The Nevada Division of Environmental Protection is currently exploring the potential development of a hub and spoke rural recycling program that could be employed in Nevada and, specifically, within the Northeastern Nevada region. Nevada's potential hub and spoke rural recycling program is largely modeled off of the hub and spoke recycling program developed by the state of New Mexico and the New Mexico Recycling Coalition. The New Mexico hub and spoke recycling program has been specifically designed to overcome the various barriers to rural (or non-metro) recycling initiatives that often exist including a lack of sufficient quantities of recyclable industrial waste and municipal solid waste and the high transportation requirements that erode overall recycling program efficiency.

Efficient collection and basic processing of materials is achieved through the hub and spoke model by creating regional recycling collection and processing centers that are located in larger yet still non-metro communities. These recycling collection and processing centers serve as

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‘hubs’ and individual smaller communities, the ‘spokes’, deliver their recyclable industrial waste and municipal solid waste to the hubs. The hubs are responsible for developing the required capital equipment and infrastructure needed to create and store high density bales of recycled commodities that remanufacturing markets can then utilize. The spokes are, in-turn, responsible for purchasing and using the recycling collection trailers and containers. Mobile drop-off stations located in the smaller spoke communities can then be transported to the nearby recycling hubs for further sorting and processing. In New Mexico, this hub and spoke rural recycling program has proven capable of significantly reducing associated transportation costs and in successfully collecting enough recyclable industrial waste and municipal solid waste to increase the overall efficiency of recycling operations in rural or non-metro communities and regions.

The New Mexico hub and spoke rural or non-metro recycling program has also proven capable of providing individuals, firms, and entire communities reliable and continued access to recycling of waste, has proven to be a replicable design that has been successfully employed throughout the state, capable of overcoming limiting transportation issues present in rural and non-metro communities and regions, capable of consolidating marketable volumes of recyclable waste, and capable for generating sufficient revenues to generally cover the cost of operations. However, the New Mexico Recycling Coalition has found it necessary to provide specific grants to individual communities and hub and spoke recycling programs throughout the state to support development and eventual implementation of this program. In December 2010, the New Mexico Recycling Coalition awarded three separate \$309,820 grants to three individual hub and spoke communities (Torrance County with a population of 16,269 total individuals, Otero County with a population of 62,776 total individuals, and the City of Deming with a surrounding regional population of 32,137 total individuals) for a total of \$929,460 awarded. In April 2011, the New Mexico Recycling Coalition awarded a total of \$385,060 to four additional counties and communities to start-up a hub and spoke recycling program and, in February 2012, awarded an additional \$590,303 to eight separate counties and communities for various ‘spoke’ equipment purchases and various ‘hub’ improvement processes.

A typical sample hub project as part of the hub and spoke program in New Mexico requires significant upfront capital investment, mostly in the purchase of equipment as well as the securing of a physical location where various ‘hub’ recycling processes can be implemented and completed. In general, the required ‘hub’ equipment includes the following items with an estimation of potential costs per item:

- Horizontal Baler with In-Pit Conveyor, Excel EX63 with 3-Phase Converter (est. cost of \$97,689)
- Fork Lift (est. cost of \$24,817)
- Portable Loading Dock (est. cost of \$11,019)
- Roll-Off Collection Equipment (est. cost of \$50,473)
- Structure, approx. 3,000 square feet (est. cost of \$125,822)

Total cost of this required ‘hub’ equipment is \$309,820 and does not include acquisition and potential demolition and remediation of an appropriate physical site for the ‘hub’ recycling processes or associated direct and indirect labor costs. The New Mexico Environment Department’s ‘Balers and Trailers’ program is sufficiently down-sized from the much more

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developed hub and spoke recycling program developed by the New Mexico Recycling Coalition. This ‘Balers and Trailers’ program, that is designed to utilize either an existing city or county-owned empty warehouse or building already located at a landfill or transfer station, is estimated to cost \$150,000 (again, excluding direct and indirect labor costs) with an estimated \$87,738 allocated for acquisition of a Horizontal Baler with In-Pit Conveyor (Gemini EX), \$3,102 for required Electrical and Concrete Work, and \$59,160 for the acquisition of needed Roll-Off Collection Equipment.

‘Spoke’ community needed equipment generally consists of Roll-Off Containers and Recycling Trailers that can be transported to the ‘hub’ community where the contents can then be unloaded and further processed. Typical ‘spoke’ activities associated with the hub and spoke recycling program generally consist of hauling, locating, right-sizing, security, unloading, and switch-out of the Roll-Off Containers and Recycling Trailers. Individual costs will vary and both direct and indirect labor costs must also be estimated.

In New Mexico, this hub and spoke rural or non-metro recycling program has proven itself as a useful template suitable for smaller non-metro communities interested in economically developing a regional recycling processing facility. The infrastructure and equipment needed to stand-up a hub and spoke recycling program has been purposefully designed for simplicity in order to minimize total investment costs. The experience in New Mexico has proven generally successful although existing hub and spoke recycling programs have found it recently necessary to plan for and develop additional storage of both loose and baled input and output materials. Having cross-trained staff onsite at the ‘hub’ recycling center has also proven important for the hub and spoke recycling program’s overall success.

## **5.2 Nevada Division of Environmental Protection Rural Landfill Reduction, Diversion, and Household Hazardous Waste Collection Program**

The Nevada Division of Environmental Protection has recently enacted a new rural landfill reduction, diversion, and household hazardous waste collection pilot program thanks in part to a U.S. Department of Agriculture Solid Waste Management Grant. This pilot program is part of a larger Rural Water Protection Project developed and administered by the Nevada Division of Environment Protection. Begun in late 2019, the program is anticipated to run through September 2020 where the pilot program will be reviewed and evaluated. Note that the full implementation of this pilot program has been disrupted and somewhat delayed due to the current impacts of the COVID-19 global pandemic that has resulted in stay-at-home orders and restriction on travel and commercial activity in Nevada since March 2020.

The pilot communities selected for this initial trial program and project include the town Goldfield (Esmeralda County), the town of Eureka (Eureka County), the town of Battle Mountain (Lander County), the town of Hawthorne (in Mineral County), and the town of Tonopah (Nye County). It should be noted that the town of Eureka and Eureka County and the town of Battle Mountain and Lander County are each located within the existing boundaries of the Northeastern Nevada Regional Development Authority.



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The primary goal of this pilot program is, according to the Nevada Division of Environmental Protection, to educate and support five initial rural communities in developing and implementing a household hazardous waste diversion and disposal program which can then serve as a model for the remaining counties in Nevada. Two specific objectives have also been developed as part of this pilot program, including: (1) assistance to landfills in reevaluating their standard operating procedures which may lead to securing additional sustainable funding for a county-located household hazardous waste collection event, and (2) reduction of the risk of infiltration and contamination of rural water sources. As a state, the protection of water resources is critical to the long-term survival and growth of Nevada's communities. In rural Nevada especially, household hazardous waste collection services tend to be limited or even non-existent. The collection and proper disposal of household hazardous materials through this pilot program is designed to help protect the state's existing water resources from pollution by reducing the threat of contamination at the landfill and to the surrounding environment from illegal dumping and improper disposal of household hazardous materials.

The work plan for the initial pilot program consists of four separate and interrelated components including: (1) landfill operator training and on-site evaluation, (2) public outreach and education, (3) collection event preparation, and (4) household hazardous waste collection event and program assessment. The first component, landfill operating training and on-site evaluation, generally consists of the development of a curriculum that will be developed in conjunction with pilot program management in order to establish a salvaging and diversion program at each targeted landfill facility in Esmeralda County, Eureka County, Lander County, Mineral County, and Nye County. This training will include, but is not limited to, educating the targeted landfill facility and facility operator(s) on the potential markets for salvaged materials and recyclables and how to hold a household hazardous waste collection event.

The second component, public outreach and education, will be completed by the individual participating county in cooperation with representatives from the Nevada Division of Environmental Protection. Outreach and education will consist of information about the salvaging program and the individual household hazardous waste collection event that will be developed for and conducted in each initially targeted landfill facility. Identification of the effects household hazardous waste has on the environment and how the community can implement selected best management practices to manage their waste, including proper prescription drug disposal, will also be included in the public outreach and education component.

The third component, collection event preparation, will be done in conjunction with the Nevada Division of Environmental Protection and the University of Nevada, Reno's Business Environmental Program in order to verify that each of the targeted landfill facilities is prepared for the household hazardous waste collection event. Representatives from the Nevada Division of Environmental Protection and the Business Environment Program will work with each of the five selected pilot program counties to develop a household hazardous waste collection event plan. Personal protection, Nevada regulatory overview, proper handling techniques, collection and disposal methods, prescription drug disposal, and community involvement and participation are a few of the various topics that will be included in this third component.

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The fourth and final component of this pilot Rural Water Protection Project, household hazardous waste collection event and program assessment, will generally require that Nevada Division of Environmental Protection and Business Environmental Program representatives to be on site during each of the five household hazardous waste collection events held at each of the targeted landfill facilities to provide support and guidance. Once each event has been completed, the Nevada Division of Environmental Protection will evaluate each individual event using feedback provided by the participating landfill operators and county personnel. The overall success of achieving this pilot project's goal and the individual objectives will be evaluated and, based upon the results of this evaluation, the Nevada Division of Environmental Protection and the Business Environmental Program will further update and refine the curriculum and approaches to further develop a statewide program for landfills operating throughout the entire state.

Again, it should be noted that the initial completion of this pilot Rural Water Protection Project was scheduled for September 2020. However, the recent impacts of the COVID-19 global pandemic in Nevada has delayed implementation of certain parts of the above outlined work plan. As the pilot project has not been completed and because no definitive evaluation results were available at the time of publication of this University Center for Economic Development technical report, the effectiveness of this program's potential for helping stand-up and build a recycling industry in Northeastern Nevada is currently unknown. The Northeastern Nevada Regional Development Authority should, however, work closely with both the Nevada Division of Environmental Protection and the University of Nevada, Reno's Business Environmental Program to evaluate the final results of this pilot project and evaluate the overall potential of the program to further support the development of a recycling industry in Northeastern Nevada.

### **5.3 Pennsylvania Recycling Markets Center**

The Pennsylvania Recycling Markets Center's, organized as a 501c(3) corporation, stated mission is to be:

*“...a leader in developing and expanding recycling markets in Pennsylvania. In a competitive global marketplace, the RMC (Recycling Markets Center) is the keystone clearing house of environmental, economic development, and manufacturing resources for end use support of recycled commodities and products. The RMC is headquartered at Penn State Harrisburg with satellite offices near Pittsburgh. The Mission of the RMC is to expand and develop more secure and robust markets for recovered (recycled) materials by helping to overcome market barriers and inefficiencies.”*

While the Pennsylvania Recycling Markets Center is not an actual recycling program, in that the Pennsylvania Recycling Markets Center does not operate any direct waste collection and recycling facility, the Center accomplishes their mission through the performance and activity and provision of technical assistance in four primary areas, including: (1) economic development, (2) accelerated commercialization, (3) general technical assistance, and (4) recycling markets intelligence through the Center's Outreach Portal. Success in each of these four areas is measured through direct and indirect job creation, the amount of total waste

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collected and diverted from area landfills and successfully recycled, and in the amount of measured energy savings generated these activities. Overall, the Pennsylvania Recycling Markets Center reports on both the environmental and economic impacts of their activities in each of these four primary areas. In the area of economic development, the Pennsylvania Recycling Markets Center focuses on increasing the use of recycled materials and commodities for the production of future component parts, materials and finished goods in order to generate and create new employment opportunities throughout the state of Pennsylvania.

In the area of accelerated commercialization, the Pennsylvania Recycling Markets Center utilizes their existing partnership with Pennsylvania State University and other public and private research partners to assist with the overall design of products made from recycled commodities and provide the needed information on design and development processes to individual Pennsylvania-based businesses. In the area of technical assistance, the Pennsylvania Recycling Markets Center works with various private-sector and non-profit partners to provide specific point-of-service based, pre-emergence, and existing business consultative assistance. In the area of recycling markets intelligence through the Center's Outreach Portal, the Pennsylvania Recycling Markets Center leverages its various research partnerships to provide requested information and analysis on a variety of topics to recycling markets and Pennsylvania-based businesses.

Key programs that the Pennsylvania Recycling Markets Center current administers are the Center of Excellence, the Commodity Pricing Program, and GreenCircle Certified Program. The Center of Excellence is a partnership between the Pennsylvania Recycling Markets Center and the Ben Franklin Technology Partners of Northern and Central Pennsylvania. The Center for Excellence itself is a network for individual processors of recycled materials, end-users of recycled materials, and various non-profit organizations to influence materials markets throughout the state of Pennsylvania. The Pennsylvania Recycling Markets Center uses the resources and relationships of the Center of Excellence to execute their goal of connecting with individual businesses and providing them with requested technical support and with emerging business opportunities.

The Commodities Pricing Program is an online commodities pricing index that provides real-time changes in regional and national recycled commodities and materials prices. The Commodities Pricing Program is maintained and administered by the Pennsylvania Recycling Markets Center. Recycled commodity information is available to registered Pennsylvania County Recycling Coordinators through the strategic partnership formed between the Pennsylvania Recycling Markets Center and RecyclingMarkets.net. The Pennsylvania Recycling Markets Center partnered with GreenCircle Certified, LLC to develop and implement the GreenCircle Certified Program for Pennsylvania. This program certifies the production of component parts, materials and finished goods made with recycled materials. The GreenCircle Certified Program helps the Pennsylvania Recycling Markets Center enhance its mission of building functioning, sustainable and growing recycling markets throughout the state by driving an increase in the use of recycled raw materials and commodities in the manufacturing and sale of more products with verified recycled materials content.

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## 5.4 New Mexico Rubberized Asphalt Concrete Pavements Program

In June 2011, Dr. Paola Bandi, P.E. with the Department of Civil Engineering at New Mexico State University, published *Rubberized Asphalt Concrete Pavements in New Mexico: Market Feasibility and Performance Assessment*, prepared for the New Mexico Environmental Department and the South Central Solid Waste Authority. The purpose of this market feasibility and performance assessment study was to evaluate the performance of pavements with rubberized open-graded friction course (ROGFC) overlays used throughout the state of New Mexico and develop a preliminary feasibility evaluation of the crumb rubber modified market within the state.

Crumb rubber is generally produced by shredding and grinding discarded and used rubber tires after other added materials, including plastics and metal, are removed. Small particles of recycled rubber are produced in this process and crumb rubber of different gradation and particle size can be used to produce asphalt-rubber binders and rubberized asphalt binders. These binders are typically referred to as crumb rubber modifiers (CRM). Using a ‘wet process’, the resulting crumb rubber modifiers can be combined with asphalt cement and other additives and eventually used in road construction and repair activities. Spearheaded by the New Mexico Department of Transportation and the New Mexico Environmental Department, the resulting mixture of crumb rubber modifiers, asphalt cement and other additives have been used over the past two decades in road construction and repair with early trials beginning in the 1980’s and 1990’s and with wide-scale usage beginning in the early 2000’s. In 2002 and 2007, the New Mexico Department of Transportation completed two separate road construction projects utilizing a thin rubberized open-graded friction course overlay, one for U.S. Highway 54 and one for U.S. Highway 62/New Mexico State Highway 180. Over the past decade, various local municipal and county governments throughout the state of New Mexico have employed the use of rubberized asphalt in various street rehabilitation on a limited basis.

The evaluation of the U.S. Highway 54 and U.S. Highway 62/New Mexico State Highway 180 New Mexico Department of Transportation projects completed by Dr. Paola Bandi in June 2011 found good performance in the early life of the utilized pavement structure with no rutting and either very minor distress or no premature cracking in the pavement. For the U.S. Highway 54 project, the resulting statistical analysis and assessment provided an indication of better pavement performance, in-terms of distress rate, when compared to a selected set of traditional, or non-rubberized open-graded friction course overlays, sampled projects located on the same highway and general geographic areas. While the assessment completed by Dr. Paola Bandi of the U.S. Highway 54 and U.S. Highway 62/New Mexico State Highway 180 projects did not include control sections was not part of a comprehensive experimental program, the preliminary assessment indicated that the rubberized open-graded friction course overlays, produced by combined crumb rubber with asphalt concrete and other additives, proved promising indications of better performance in both the short-term and long-term than similar non-rubberized open-graded friction course overlays.

Dr. Paola Bandi’s economic assessment of the production and use of crumb rubber modifiers in pavement applications in the state of New Mexico showed initial economic and environmental benefits. The main components of this economic and environmental assessment included the

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identification and analysis of the necessary processing and manufacturing equipment, current material producers, suppliers of crumb rubber modifier materials, sources of discarded and used rubber tires, and initial investment costs. Dr. Paola Bandi found that the development and completion of a facility needed to produce the rubberized open-graded friction course overlays required a high initial capital investment, produced a constant annual demand for approximately 9,000 tons of crumb rubber modifier, and a reliable source of approximately 1.25 million discarded and used rubber tires annually.

For Northeastern Nevada, the New Mexico rubberized asphalt concrete pavements program may be suitable for trial projects at the community level and for large scale industrial and commercial firms with generally restricted access but with significantly high demand for generally inexpensive pavement materials. Possible state and local government regulatory statutes may require modification and controlled study and evaluation of the use of rubberized open-graded friction course overlays will have to be conducted, completed and analyzed in order to evaluate the potential effectiveness of this type of course overlay in Nevada. However, the development of specialized facilities and the purchasing of specialized equipment and materials to first produce the crumb rubber modifier and then the rubberized open-graded friction course overlays may be possible through the development and execution of a public-private partnership between the Northeastern Nevada Regional Development Authority and a single or set of large industrial or commercial private-sector firms willing to utilize these materials.

## **5.5 New Mexico Tire-Bale Erosion Control and Bank Stabilization Projects**

In July 2012, the New Mexico Department of Transportation published an investigatory and research project, *Standards for Tire-Bale Erosion Control and Bank Stabilization Projects: Validation of Existing Practice and Implementation*. This investigatory and research project was designed as part of a larger statewide initiative to promote the use of a growing stockpile of discarded and used rubber tires in the state and meet the growing demand for needed backfill material in highway construction. This investigatory and research project was further designed to determine whether or not compressed tire-bales could be used as a cost-effective alternative to traditional fill materials for erosion control and bank stabilization projects in the state.

While the production of tire-bales does not require specific recycling processes, including the removal of plastic and metal additives and the production of crumb rubber modifiers, the resulting investigatory and research project completed by the New Mexico Department of Transportation concluded that the tire-bale structure itself requires that the structure remain stable under possibly unpredictable load conditions during the life span of the resulting structure. Initial concern about using tire-bales for erosion control and bank stabilization projects was the potential intrusion of water behind the structure and the possible failure of the structure itself. Further concerns regarding the use of tire-bales for erosion control and bank stabilization projects was the contact between the soil itself and the tire-bale fill structure. Scouring at the contact point between a stream and the tire-bale structure has been found to potentially allow water to get in behind the structure, eventually leading to failure.

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Using proper and recommended guidelines for the construction of tire-bale structures and their proper placement and use in erosion control and bank stabilization projects was determined to be an acceptable approach to erosion control and bank stabilization. The authors of this New Mexico Department of Transportation investigatory and research project found that the development of failure in tire-bale erosion control and bank stabilization structures could likely be traced to a faulty structural design in the tire-bale structures themselves or in an inadequate and incomplete understanding and control of site-specific surface and subsurface water infiltration.

For Northeastern Nevada, the New Mexico Department of Transportation's approach to the use of tire-bales in erosion control and bank stabilization projects may be suitable for trial projects at the community level and for large scale industrial and commercial firms with generally restricted access but with significantly high demand for inexpensive fill materials. Possible state and local government regulatory statutes may require modification and controlled study and evaluation of the use of discarded and used tires in the production of relatively inexpensive tire-bale structures for use in erosion control and bank stabilization projects will have to be conducted, completed and analyzed in order to evaluate the potential effectiveness of this approach.

For Northeastern Nevada, this approach and the use of discarded and used rubber tires in the construction of tire-bale structures could quickly and affordably solve the region's need for addressing a growing supply of discarded and used tires with minimal upfront capital investment. Beyond the use of these tire-bales in erosion control and bank stabilization projects for large-scale industrial and commercial use, there are possible applications of this approach in the region's relatively large agricultural industry sector and even possibly in the stabilization of mine tailing piles located throughout the region. Possible future public-private partnerships between the Northeastern Nevada Regional Development Authority and a single or set of large industrial or commercial private-sector firms willing to test the use of tire-bale structures in a limited piloted setting may be required.

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**Appendix A – Recyclable Waste Types and Amount of Waste for Individual  
Mine Sites Operated by Nevada Gold Mines within the Northeastern Nevada  
Regional Development Authority Area**

<b>Table A.1 – Recyclable Waste Types and Amounts Produced Nevada Gold Mines – Long Canyon 2018</b>	
<b>Recyclable Waste Type</b>	<b>Amount Produced (in Number of Units, Kilograms, Cubic Meters or Metric Tons/Tonnes)</b>
Plastic	33.1 (Metric Tonnes)
Paper	49.7 (Metric Tonnes)
Pallets	-
Cardboard (Onsite)	-
Cardboard (Offsite)	33.1 (Metric Tonnes)
HDPE Pipe/Liner	-
Used Oil	79.76 (Cubic Meters)
Used Antifreeze	23.32 (Cubic Meters)
Batteries (Lithium)	-
Batteries (Lead)	-
Batteries (Alkaline)	-
Batteries	6.7 (Metric Tonnes)
Electronics	1.0 (Metric Tonnes)
Lamps/Bulbs	1.0 (Metric Tonnes)
Ink Cartridges	50.0 (Number of Units)
Ink Cartridges	-
Food Waste	49.7 (Metric Tonnes)
Tires – Large (Onsite)	52.0 (Number of Units)
Tires – Large	-
Tires – LV	224.0 (Number of Units)
Tires – LV	-
Metal	52.9 (Metric Tonnes)
Totes/Containers	2.3 (Metric Tonnes)
Aluminum Cans	-

*Source: Nevada Gold Mines, 2019*



<b>Table A.2 – Recyclable Waste Types and Amounts Produced Nevada Gold Mines – Carlin Complex (Barrick Legacy) 2018</b>	
<b>Recyclable Waste Type</b>	<b>Amount Produced (in Number of Units, Kilograms, Cubic Meters or Metric Tons/Tonnes)</b>
Plastic	-
Paper	-
Pallets	-
Cardboard (Onsite)	-
Cardboard (Offsite)	17.5 (Metric Tonnes)
HDPE Pipe/Liner	-
Used Oil	520.48 (Cubic Meters)
Used Antifreeze	27.22 (Cubic Meters)
Batteries (Lithium)	-
Batteries (Lead)	-
Batteries (Alkaline)	-
Batteries	1.52 (Metric Tonnes)
Electronics	4.75 (Metric Tonnes)
Lamps/Bulbs	-
Ink Cartridges	-
Ink Cartridges	-
Food Waste	-
Tires – Large (Onsite)	-
Tires – Large	1,000.0 (Number of Units)
Tires – LV	-
Tires – LV	-
Metal	3,206.37 (Metric Tonnes)
Totes/Containers	-
Aluminum Cans	-

*Source: Nevada Gold Mines, 2019*

<b>Table A.3 – Recyclable Waste Types and Amounts Produced Nevada Gold Mines – Carlin Complex (Newmont Legacy) 2018</b>	
<b>Recyclable Waste Type</b>	<b>Amount Produced (in Number of Units, Kilograms, Cubic Meters or Metric Tons/Tonnes)</b>
Plastic	-
Paper	-
Pallets	-
Cardboard (Onsite)	-
Cardboard (Offsite)	2.23 (Metric Tonnes)
HDPE Pipe/Liner	56.49 (Metric Tons)
Used Oil	1,068.55 (Cubic Meters)
Used Antifreeze	116.13 (Cubic Meters)
Batteries (Lithium)	-
Batteries (Lead)	-
Batteries (Alkaline)	-
Batteries	46.96 (Metric Tonnes)
Electronics	12.16 (Metric Tonnes)
Lamps/Bulbs	-
Ink Cartridges	-
Ink Cartridges	-
Food Waste	-
Tires – Large (Onsite)	-
Tires – Large	-
Tires – LV	1,000.0 (Number of Units)
Tires – LV	-
Metal	3,482.25 (Metric Tonnes)
Totes/Containers	-
Aluminum Cans	-

*Source: Nevada Gold Mines, 2019*

<b>Table A.4 – Recyclable Waste Types and Amounts Produced Nevada Gold Mines – Cortez 2018</b>	
<b>Recyclable Waste Type</b>	<b>Amount Produced (in Number of Units, Kilograms, Cubic Meters or Metric Tons/Tonnes)</b>
Plastic	-
Paper	-
Pallets	-
Cardboard (Onsite)	-
Cardboard (Offsite)	-
HDPE Pipe/Liner	-
Used Oil	1,060.0 (Cubic Meters)
Used Antifreeze	-
Batteries (Lithium)	0.18 (Metric Tonnes)
Batteries (Lead)	4.35 (Metric Tonnes)
Batteries (Alkaline)	-
Batteries	-
Electronics	1.1 (Metric Tonnes)
Lamps/Bulbs	164.2 (Metric Tonnes)
Ink Cartridges	136.0 (Number of Units)
Ink Cartridges	-
Food Waste	-
Tires – Large (Onsite)	700.0 (Number of Units)
Tires – Large	-
Tires – LV	1,500.0 (Number of Units)
Tires – LV	-
Metal	24,000.0 (Metric Tonnes)
Totes/Containers	-
Aluminum Cans	-

*Source: Nevada Gold Mines, 2019*

<b>Table A.5 – Recyclable Waste Types and Amounts Produced Nevada Gold Mines – Phoenix 2018</b>	
<b>Recyclable Waste Type</b>	<b>Amount Produced (in Number of Units, Kilograms, Cubic Meters or Metric Tons/Tonnes)</b>
Plastic	1,814.0 (Metric Tonnes)
Paper	2,721.0 (Metric Tonnes)
Pallets	8.26 (Metric Tonnes)
Cardboard (Onsite)	1,814.0 (Metric Tonnes)
Cardboard (Offsite)	-
HDPE Pipe/Liner	56.23 (Metric Tonnes)
Used Oil	1,211.0 (Cubic Meters)
Used Antifreeze	3.13 (Cubic Meters)
Batteries (Lithium)	-
Batteries (Lead)	-
Batteries (Alkaline)	-
Batteries	8.04 (Metric Tonnes)
Electronics	1.36 (Metric Tonnes)
Lamps/Bulbs	246.75 (Metric Tonnes)
Ink Cartridges	48 (Number of Units)
Ink Cartridges	-
Food Waste	4.45 (Metric Tonnes)
Tires – Large (Onsite)	114.0 (Number of Units)
Tires – Large	-
Tires – LV	269.0 (Number of Units)
Tires – LV	-
Metal	3,317.0 (Metric Tonnes)
Totes/Containers	0.45 (Metric Tonnes)
Aluminum Cans	-

*Source: Nevada Gold Mines, 2019*

<b>Table A.6 – Recyclable Waste Types and Amounts Produced Nevada Gold Mines – TC 2018</b>	
<b>Recyclable Waste Type</b>	<b>Amount Produced (in Number of Units, Kilograms, Cubic Meters or Metric Tons/Tonnes)</b>
Plastic	-
Paper	-
Pallets	-
Cardboard (Onsite)	-
Cardboard (Offsite)	-
HDPE Pipe/Liner	-
Used Oil	314.50 (Cubic Meters)
Used Antifreeze	16.24 (Cubic Meters)
Batteries (Lithium)	-
Batteries (Lead)	-
Batteries (Alkaline)	-
Batteries	3.9 (Metric Tonnes)
Electronics	-
Lamps/Bulbs	244.94 (Metric Tonnes)
Ink Cartridges	-
Ink Cartridges	-
Food Waste	-
Tires – Large (Onsite)	257.0 (Number of Units)
Tires – Large	-
Tires – LV	9.07 (Number of Units)
Tires – LV	-
Metal	479.0 (Metric Tonnes)
Totes/Containers	-
Aluminum Cans	-

*Source: Nevada Gold Mines, 2019*

<b>Table A.7 – Recyclable Waste Types and Amounts Produced Nevada Gold Mines – TR 2018</b>	
<b>Recyclable Waste Type</b>	<b>Amount Produced (in Number of Units, Kilograms, Cubic Meters or Metric Tons/Tonnes)</b>
Plastic	0.127 (Metric Tonnes)
Paper	0.753 (Metric Tonnes)
Pallets	-
Cardboard (Onsite)	-
Cardboard (Offsite)	-
HDPE Pipe/Liner	-
Used Oil	98.19 (Cubic Meters)
Used Antifreeze	-
Batteries (Lithium)	-
Batteries (Lead)	-
Batteries (Alkaline)	-
Batteries	0.37 (Metric Tonnes)
Electronics	0.07 (Metric Tonnes)
Lamps/Bulbs	143.34 (Metric Tonnes)
Ink Cartridges	-
Ink Cartridges	-
Food Waste	-
Tires – Large (Onsite)	540.0 (Number of Units)
Tires – Large	-
Tires – LV	1,100.0 (Number of Units)
Tires – LV	-
Metal	654.15 (Metric Tonnes)
Totes/Containers	-
Aluminum Cans	0.10 (Metric Tonnes)

*Source: Nevada Gold Mines, 2019*

**A MARKET AND TECHNICAL FEASIBILITY STUDY OF  
RECYCLING OPPORTUNITIES IN NORTHEASTERN NEVADA**



# **A MARKET AND TECHNICAL FEASIBILITY STUDY OF RECYCLING OPPORTUNITIES IN NORTHEASTERN NEVADA**

Frederick A. Steinmann

and

Kathryn L. Muzzin

and

Thomas R. Harris

Frederick Steinmann is an Assistant Research Professor with the University Center for Economic Development, College of Business at the University of Nevada, Reno.

Kathryn Muzzin is a Graduate Student in the College of Business and a Graduate Assistant with the Nevada Small Business Development Center at the University of Nevada, Reno.

Thomas Harris is a Professor of Economics and Director of the University Center for Economic Development, College of Business at the University of Nevada, Reno.

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Frederick A. Steinmann, DPPD  
University Center for Economic Development  
University of Nevada, Reno  
The College of Business  
Mail Stop 204  
Reno, Nevada 89557  
Phone: 775.784.1655



UCED  
University of Nevada, Reno  
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# 1.0 Introduction, Overview and Executive Summary

In September 2019, representatives from the Northeastern Nevada Regional Development Authority contracted with the University Center for Economic Development, part of the College of Business at the University of Nevada, Reno, to complete a market and technical feasibility study of recycling opportunities for the five-county Northeastern Nevada area. This University Center for Economic Development technical report summarizes the results of this market and technical feasibility study.

The Northeastern Nevada Regional Development Authority was established in 2012 as a result of the development of the state of Nevada's comprehensive statewide economic development plan, *Moving Nevada Forward: A Plan for Excellence in Economic Development 2012-2014*. Initially, the Northeastern Nevada Regional Development Authority's footprint consisted only of Elko County and the incorporated cities held therein. Between 2014 and 2016, Humboldt County, Eureka County, Lander County, and White Pine County joined the Northeastern Nevada Regional Development Authority followed by Pershing County in 2019. This market and technical feasibility study of recycling opportunities for Northeastern Nevada covers the development of a new recycling industry sector for the five counties of Humboldt County, Elko County, Eureka County, Lander County, and White Pine County and was developed in concert with the Northeastern Nevada Regional Development Authority's new five-year Comprehensive Economic Development Strategy for 2020 through 2025.

## 1.1 Overview and Executive Summary

Based upon the results of the analysis completed and presented throughout this University Center for Economic Development technical report, it is concluded that market and technical feasibility for the development of a new recycling industry in Northeastern Nevada does **not** currently exist. However, various recycling opportunities, and the potential for a future recycling industry in Northeastern Nevada **does** exist given the appropriate use and combination of targeted public-sector policies and incentives and improved support and championing by key private-sector stakeholders.

The successful development of a growing and sustainable recycling industry is largely dependent upon two critical conditions. First, there must be a substantial and growing source of potentially recyclable materials (inputs) to support ongoing and expanded recycling processes including in the production of new component parts, materials and finished goods that utilize various recycled commodities. Second, regional and national market prices for the recycled commodities must be great enough to cover the financial costs of collecting and processing the potentially recyclable materials (outputs) in order to support and grow the profitability of individual firms involved in the production of the recycled commodities. In order to effectively and efficiently take advantage of these conditions, a region must also have the requisite infrastructure to support the

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collection and sorting of industrial and municipal wastes and the requisite private-sector firm structure and presence to conduct the processing and production of recyclable commodities. General public support, support from the private-sector, and public-sector regulatory and policy support must each exist for any recycling industry sector to be successful in both the short-term and long-term.

Regarding the first condition, the existence of a substantial and growing source of potentially recyclable materials (inputs), the amount of industrial waste (generated by individual firms and industries) and the amount of municipal solid waste (generated mainly by individual households) is a direct function of the levels of economic activity, personal consumption patterns, and population growth levels measured for a defined geographic area. While general levels of economic activity have increased substantially throughout the Northeastern Nevada region over the last several years, total population has grown at a rate measurably slower than that of the entire state of Nevada, 2.9 percent growth in Northeastern Nevada compared to 5.8 percent statewide, between 2013 and 2017. The total number of households in Northeastern Nevada and the overall size of the region's civilian workforce, growing by 1.4 percent and 3.6 percent respectively between 2013 and 2017, have also lagged behind the rate of growth in the state's total number of households and the state's overall civilian workforce, growing by 5.3 percent and 6.9 percent respectively between 2013 and 2017.

Total employment opportunities created within the region's primary industry sectors, including the Mining, Quarrying, and Oil and Gas industry sector, the Accommodation and Food Services industry sector, the Retail Trade industry sector, and the Construction industry sector, have all declined in recent years, declining by -6.0 percent, -7.0 percent, -1.0 percent, and -15.0 percent respectively between 2013 and 2018. Only has growth in the Government industry sector (the region's second largest industry sector) been positive, increasing by 1.0 percent between 2013 and 2018. Overall growth in the region's Administrative and Support and Waste Management and Remediation industry sector, measured in the total number of employment opportunities created by firms within the industry sector, also declined between 2013 and 2018, declining by 219 total employment opportunities or -19.0 percent.

While significant variation in the amount of total industrial waste and total municipal solid waste collected by landfills located within the five Northeastern Nevada counties existed between 2013 and 2018 and while there was also significant variation in the year-to-year amount of total industrial waste and total municipal solid waste collected at each individual landfill, regional totals of both sources of waste declined significantly between 2013 and 2018. Between 2013 and 2018, the total amount of industrial waste collected by landfills operating within the Northeastern Nevada region decreased by approximately 9,448 total metric tonnes, or by -5.7 percent. Between 2013 and 2018, the total amount of municipal solid waste collected by landfills operating within the Northeastern Nevada region decreased by approximately 3,907 total metric tonnes, or by -4.4 percent. The total amount of industrial waste and municipal solid waste combined and collected by landfills operating within the Northeastern Nevada region decreased by approximately 13,355 metric tonnes, or by -5.2 percent, between 2013 and 2018.

Annually, there was considerable year-to-year variability in the growth or decrease of both industrial waste and municipal solid waste collected by individual landfills operating throughout

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Northeastern Nevada. Between 2013 and 2014, the total amount of all waste (industrial and municipal solid combined) collected by all area landfills increased by just 0.7 percent and then decreased by -9.9 percent between 2014 and 2015 followed by a further decrease of -5.0 percent between 2015 and 2016. Between 2016 and 2017, the total amount of all waste collected by area landfills increased by 68.3 percent followed by a decrease of -34.6 percent between 2017 and 2018. Similar year-to-year volatility was observed for just the amount of total industrial waste and for just the amount of total municipal solid waste collected by landfills operating throughout the region. Additional similar year-to-year volatility in the total amount of industrial waste, in the total amount of municipal solid waste, and in the total amount of all waste (industrial and municipal solid combined) collected by each individual landfill operating in Humboldt County, Elko County, Eureka County, Lander County, and White Pine County were observed.

Regarding the second condition, the prevalence of relatively high and increasing regional and national market prices for recycled commodities (outputs), the regional and national prices for recycled plastic commodities, recycled metal commodities, and recycled paper commodities have generally trended downward between 2016 and 2020 and, in some cases, have trended downward at a significantly negative rate. For the three separate recycled plastic commodities examined as part of this study, only one had observable and predicated increases in both regional and national market prices. For PET Baled plastics, the regional market price declined by -51.6 percent and the national market price declined by -14.2 percent between 2016 and 2020 and the predicated future regional and national market prices are expected to decline by -\$0.0001 per pound and -\$0.0003 per pound. For Colored HDPE plastics, the regional market price remained unchanged between 2016 and 2020 and the national market price declined by -16.5 percent between 2016 and 2020. The anticipated future regional and national market prices for Colored HDPE plastics are predicted to decline by -\$0.0001 per pound and -\$0.0002 per pound respectively.

For the six separate recycled metal commodities examined as part of this study, only the national price for Aluminum Cans Loose and only the regional price of Steel Cans Sorted Baled saw increases between 2016 and 2020. Steel Cans Sorted Baled was the only recycled metal commodity to have a predicted future increase. For Aluminum Cans Sorted, the regional price declined by -9.8 percent and the national price declined by -8.3 percent and the predicted future regional and national prices are expected to decline by -\$0.0004 per pound and by -\$0.0004 per pound respectively. For Aluminum Cans Loose, there was no growth in the regional price between 2016 and 2020 and a minor increase in the national price of just 3.4 percent between 2016 and 2020. The predicated future regional price for Aluminum Cans Loose is expected to remain unchanged and the predicted future national price of Aluminum Cans Loose is expected to decline by -\$0.0007 per pound. For Steel Cans Sorted Baled, the regional price increased by 78.3 percent between 2016 and 2020 and the future predicted regional price is expected to increase by \$0.11 per ton. For Steel Cans Sorted Baled, the national price decreased by -11.1 percent between 2016 and 2020 and the future predicted national price is expected to decrease by -\$0.02 per ton.

For Steel Cans Sorted Densified, the regional price remained unchanged between 2016 and 2020 and future predicted regional prices are expected to remain unchanged with no measurable growth. The national price for Steel Cans Sorted Densified decreased by -45.5 percent between

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2016 and 2020 and the future predicted national price is expected to decrease by -\$0.04 per ton. For Steel Cans Loose, the regional price remained unchanged between 2016 and 2020 and future predicted regional prices are expected to remain unchanged with no measurable growth. The national price for Steel Cans Loose decreased by -40.0 percent between 2016 and 2020 and the future predicted national price is expected to decrease by -\$0.01 per ton. For White Goods Loose (discarded household appliances), both the regional and national price between 2016 and 2020 remained unchanged. The future predicted regional and national price for White Goods Loose are both expected to remain unchanged with no measurable growth in either price.

Change in the regional and national prices for each of the four recycled paper commodities and for the predicated future change of the four recycled paper commodities examined in this study were all significantly negative. For Mixed Paper, the regional price declined by -101.0 percent between 2016 and 2020 and the future predicted regional price is expected to decline by -\$1.39 per ton. The national price for Mixed Paper declined by -102.5 percent between 2016 and 2020 and the future predicted national price is expected to decline by -\$1.21 per ton. For Sorted Residential Paper, the regional price declined by -92.3 percent between 2016 and 2020 and the future predicated regional price is expected to decline by -\$1.32 per short ton. The national price for Sorted Residential Paper declined by -92.3 between 2016 and 2020 and the future predicted national price is expected to decline by -\$1.19 per short ton.

For Paper Corrugated Containers, the regional price declined by -89.1 percent between 2016 and 2020 and the future predicted regional price is expected to decline by -\$1.66 per short ton. The national price for Paper Corrugated Containers declined by -76.7 percent between 2016 and 2020 and the future predicted national price is expected to decline by -\$1.46 per short ton. For Sorted Office Paper, the regional price declined by -43.8 percent between 2016 and 2020 and the future predicted regional price is expected to decline by -\$0.60 per short ton. The national price for Sorted Office Paper declined by -42.9 percent between 2016 and 2020 and the future predicated national price is expected to decline by -\$0.52 per short ton.

Despite the largely unfavorable observed and predicted conditions of the required inputs and expected outputs needed to support a sustainable and growing recycling industry in Northeastern Nevada, there continues to be ongoing and expanded use of the various recycle commodities examined in this study in the production of new component parts, materials and finished goods both nationally and globally. These uses, detailed in Section 4.0 of this University Center for Economic Development technical report, represent possible opportunities for a future recycling industry in Northeastern Nevada if the observed and predicted conditions of the required inputs and expected outputs improve. The development and implementation of new recycling programs and projects in Nevada and the potential to model and use other recycling programs and projects developed in other states, each detailed in Section 5.0 of this University Center for Economic Development technical report, can provide guidance for both public-sector and private-sector initiated economic development efforts employed and designed to support a future recycling industry in Northeastern Nevada.

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## 2.0 Anticipating Future Growth in Waste Levels in Northeastern Nevada

According to the U.S. Environmental Protection Agency, the amount of municipal solid waste and other waste products produced by individuals and private-sector firms is directly influenced by the levels of economic activity, personal consumption patterns, and population growth. Developed societies, including industrial and post-industrial economies such as the United States, generally generate and produce large amounts of municipal solid waste (food wastes, packaged goods, disposable goods, used electronics, etc.) and commercial and industrial wastes (demolition debris, incineration residues, refinery sludges, etc.).

For individual communities and economic regions such as the Northeastern Nevada Regional Development Authority region, as population levels and economic activity levels increase, the total amount of municipal solid waste and commercial and industrial wastes generated throughout the region will likely increase as well. This section presents a general overview of the Northeastern Nevada economy including an analysis of the waste management and recycling industry within the region. The purpose of this section is to demonstrate the potential for growing the waste management and recycling industry within the Northeastern Nevada region as part of a larger economic development strategy.

### 2.1 General Socio-Demographic and Economic Data for the Northeastern Nevada Regional Development Authority Area

This section presents general trends in a variety of socio-demographic and economic categories for the Northeastern Nevada Regional Development Authority's area, including changes in total population, total number of households, median household income, median family income, per capita (mean) income, the size of the civilian workforce, and changes in the civilian unemployment rate for Elko County, Eureka County, Humboldt County, Lander County, and White Pine County. When possible, comparisons between each individual county, the five-county region as a whole, the state of Nevada, and the United States is provided.

#### 2.1.a Total Population

Table 2.1 presents the change in total population for each county within the Northeastern Nevada Regional Development Authority area, for the region as a whole, for the state of Nevada, and for the United States between 2013 and 2017.

Between 2013 and 2017, the total residential population for the entire Northeastern Nevada region (including Elko County, Eureka County, Humboldt County, Lander County, and White Pine County) increased from an estimated 84,494 total individuals in 2013 to an estimated 86,938 total individuals in 2017, a net increase of 2,444 total individuals or 2.9 percent. Comparatively, the total population for the entire state of Nevada increased from an estimated

2.7 million total individuals in 2013 to an estimated 2.9 million total individuals in 2017, a net increase of approximately 157,659 total individuals or 5.8 percent. The total population for the entire United States increased from an estimated 311.5 million total individuals in 2013 to an estimated 321.0 million total individuals in 2017, a net increase of approximately 9.5 million total individuals or 3.0 percent.

<b>Table 2.1 – Total Population Communities within the Northeastern Nevada Regional Development Authority</b>				
<b>Community</b>	<b>2013</b>	<b>2017</b>	<b>2013-2017 Actual Change</b>	<b>2013-2017 Percent Change</b>
<b>Elko County</b>	50,023	52,377	2,354	4.7%
<b>Eureka County</b>	1,804	1,728	-76	-4.2%
<b>Humboldt County</b>	16,800	17,088	288	1.7%
<b>Lander County</b>	5,844	5,887	43	0.7%
<b>White Pine County</b>	10,023	9,858	-165	-1.6%
<b>Northeastern Nevada Region</b>	<b>84,494</b>	<b>86,938</b>	<b>2,444</b>	<b>2.9%</b>
<b>State of Nevada</b>	2,730,066	2,887,725	157,659	5.8%
<b>United States</b>	311,536,594	321,004,407	9,467,813	3.0%

*Source: U.S. Census Bureau; American Community Survey, 5-Year Estimates; 2013 and 2017*

Within the Northeastern Nevada region, Elko County saw the largest population growth between 2013 and 2017, increasing from an estimated 50,023 total individuals in 2013 to an estimated 52,377 total individuals in 2017, a net increase of 2,354 total individuals or 4.7 percent. Humboldt County had the second largest growth in total population between 2013 and 2017, increasing from an estimated 16,800 total individuals in 2013 to an estimated 17,088 total individuals in 2017, a net increase of 288 total individuals or 1.7 percent. In Lander County, the total population increased by just 43 total individuals, or by 0.7 percent, between 2013 and 2017, increasing from an estimated 5,844 total individuals in 2013 to an estimated 5,887 total individuals in 2017.

Both Eureka County and White Pine County experienced measurable declines in total population between 2013 and 2017. In Eureka County, the total population decreased from an estimated 1,804 total individuals in 2013 to an estimated 1,728 total individuals in 2017, a net decrease of 76 total individuals or -4.2 percent. In White Pine County, total population decreased from an estimated 10,023 total individuals in 2013 to an estimated 9,858 total individuals in 2017, a net decrease of 165 total individuals or -1.6 percent.

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### 2.1.b Total Number of Households

Table 2.2 presents the change in the total number of households for each county within the Northeastern Nevada Regional Development Authority area, for the region as a whole, for the state of Nevada, and for the United States between 2013 and 2017.

<b>Table 2.2 – Total Number of Households Communities within the Northeastern Nevada Regional Development Authority</b>				
<b>Community</b>	<b>2013</b>	<b>2017</b>	<b>2013-2017 Actual Change</b>	<b>2013-2017 Percent Change</b>
<b>Elko County</b>	17,599	17,882	283	1.6%
<b>Eureka County</b>	416	434	18	4.3%
<b>Humboldt County</b>	6,314	6,261	-53	-0.8%
<b>Lander County</b>	2,010	2,183	173	8.6%
<b>White Pine County</b>	3,357	3,343	-14	-0.4%
<b>Northeastern Nevada Region</b>	<b>29,696</b>	<b>30,103</b>	<b>407</b>	<b>1.4%</b>
<b>State of Nevada</b>	999,016	1,052,249	53,233	5.3%
<b>United States</b>	115,610,216	118,825,921	3,215,705	2.8%

*Source: U.S. Census Bureau; American Community Survey, 5-Year Estimates; 2013 and 2017*

Between 2013 and 2017, the total number of households for the entire Northeastern Nevada region increased from an estimated 29,696 total households in 2013 to an estimated 30,103 total households in 2017, a net increase of 407 total households or 1.4 percent. Across the entire state of Nevada, the total number of households increased from an estimated 999,016 total households in 2013 to an estimated 1.1 million total households in 2017, a net increase of 53,244 total households or 5.3 percent. Nationwide, the total number of households in the United States increased from an estimated 115.6 million total households in 2013 to an estimated 118.8 million total households in 2017, a net increase of approximately 3.2 million total households or 2.8 percent.

Within the Northeastern Nevada region, Elko County, Eureka County, and Lander County each saw growth in the total number of households within each county between 2013 and 2017. Between 2013 and 2017, the total number of households in Elko County increased from an estimated 17,599 total households in 2013 to an estimated 17,882 total household in 2017, a net increase of 283 total households or 1.6 percent. Between 2013 and 2017, the total number of households in Eureka County increased from an estimated 416 total households in 2013 to an estimated 434 total households in 2017, a net increase of 18 total households or 4.3 percent. In

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Lander County, the total number of households increased from an estimated 2,010 total households in 2013 to an estimated 2,183 total households in 2017, a net increase of 173 total households or 8.6 percent.

Between 2013 and 2017, the total number of households in both Humboldt County and White Pine County decreased. In Humboldt County, the total number of households decreased slightly, decreasing from an estimated 6,314 total households in 2013 to an estimated 6,261 total households in 2017, a net decrease of just 53 total households or -0.8 percent. In White Pine County, the total number of households also decreased slightly, decreasing from an estimated 3,357 total households in 2013 to an estimated 3,343 total households in 2017, a net decrease of just 14 total households or -0.4 percent.

### 2.1.c Median Household Income

Table 2.3 presents the change in median household income for each county within the Northeastern Nevada Regional Development Authority area, for the region as a whole, for the state of Nevada, and for the United States between 2013 and 2017.

<b>Table 2.3 – Median Household Income (2017 Inflation-Adjusted Dollars) Communities within the Northeastern Nevada Regional Development Authority</b>				
<b>Community</b>	<b>2013</b>	<b>2017</b>	<b>2013-2017 Actual Change</b>	<b>2013-2017 Percent Change</b>
<b>Elko County</b>	\$70,238	\$76,178	\$5,940	8.5%
<b>Eureka County</b>	\$64,632	\$67,159	\$2,527	3.9%
<b>Humboldt County</b>	\$59,472	\$69,324	\$9,852	16.6%
<b>Lander County</b>	\$72,742	\$79,865	\$7,123	9.8%
<b>White Pine County</b>	\$48,586	\$60,358	\$11,772	24.2%
<b>Northeastern Nevada Region (Average)</b>	<b>\$63,134</b>	<b>\$70,577</b>	<b>\$7,443</b>	<b>11.8%</b>
<b>State of Nevada</b>	\$52,800	\$55,434	\$2,634	5.0%
<b>United States</b>	\$53,046	\$57,652	\$4,606	8.7%

*Source: U.S. Census Bureau; American Community Survey, 5-Year Estimates; 2013 and 2017*

Between 2013 and 2017, the estimated median household income for the entire Northeastern Nevada region increased significantly, increasing from an estimated \$63,134 in 2013 to an estimated \$70,577 in 2017, a net increase of approximately \$7,443 or 11.8 percent. For the entire state of Nevada, median household income increased from \$52,800 in 2013 to \$55,434 in



2017, a net increase of \$2,634 or 5.0 percent. Nationwide, median household income for the entire United States increased from \$53,046 in 2013 to \$57,652 in 2017, a net increase of \$4,606 or 8.7 percent.

Throughout the entire Northeastern Nevada region, median household income levels increased significantly for each of the five member counties. In Elko County, median household income increased from \$70,238 in 2013 to \$76,178 in 2017, a net increase of \$5,940 or 8.5 percent. In Eureka County, median household income increased from \$64,632 in 2013 to \$67,159 in 2017, a net increase of \$2,527 or 3.9 percent. In Humboldt County, median household income increased from \$59,472 in 2013 to \$69,324 in 2017, a net increase of \$9,852 or 16.6 percent. In Lander County, median household income increased from \$72,742 in 2013 to \$79,865 in 2017, a net increase of \$7,123 or 9.8 percent. In White Pine County, median household income increased from \$48,586 in 2013 to \$60,358 in 2017, a net increase of \$11,772 or 24.2 percent.

#### 2.1.d Median Family Income

Table 2.4 presents the change in median family income for each county within the Northeastern Nevada Regional Development Authority area, for the region as a whole, for the state of Nevada, and for the United States between 2013 and 2017.

<b>Table 2.4 – Median Family Income (2017 Inflation-Adjusted Dollars) Communities within the Northeastern Nevada Regional Development Authority</b>				
<b>Community</b>	<b>2013</b>	<b>2017</b>	<b>2013-2017 Actual Change</b>	<b>2013-2017 Percent Change</b>
<b>Elko County</b>	\$75,231	\$86,421	\$11,190	14.9%
<b>Eureka County</b>	\$94,648	\$109,085	\$14,437	15.3%
<b>Humboldt County</b>	\$74,433	\$80,884	\$6,451	8.7%
<b>Lander County</b>	\$75,857	\$96,250	\$20,393	26.9%
<b>White Pine County</b>	\$63,982	\$69,481	\$5,499	8.6%
<b>Northeastern Nevada Region (Average)</b>	<b>\$76,830</b>	<b>\$88,424</b>	<b>\$11,594</b>	<b>15.1%</b>
<b>State of Nevada</b>	\$61,359	\$65,469	\$4,110	6.7%
<b>United States</b>	\$64,719	\$70,850	\$6,131	9.5%

*Source: U.S. Census Bureau; American Community Survey, 5-Year Estimates; 2013 and 2017*

The estimated median family income for the entire Northeastern Nevada region increased from an estimated \$76,830 in 2013 to an estimated \$88,424 in 2017, a significant increase of

approximately \$11,594 or 15.1 percent. Comparatively, median family income for the entire state of Nevada increased from \$61,359 in 2013 to \$65,469 in 2017, a net increase of \$4,110 or 6.7 percent. Nationwide, median family income for the entire United States increased from \$64,719 in 2013 to \$70,850 in 2017, a net increase of \$6,131 or 9.5 percent.

Like median household income, median family income for each of the five counties within the Northeastern Nevada region increased between 2013 and 2017. In Elko County, median family income increased from \$75,231 in 2013 to \$86,421 in 2017, a net increase of \$11,190 or 14.9 percent. In Eureka County, median family income increased from \$94,648 in 2013 to \$109,085 in 2017, a net increase of \$14,437 or 15.3 percent. In Humboldt County, median family income increased from \$74,433 in 2013 to \$80,884 in 2017, a net increase of \$6,451 or 8.7 percent. In Lander County, median family income increased from \$75,857 in 2013 to \$96,250 in 2017, a net increase of \$20,393 or 26.9 percent. In White Pine County, median family income increased from \$63,982 in 2013 to \$69,481 in 2017, a net increase of \$5,499 or 8.6 percent.

#### 2.1.e Per Capita (Mean) Income

Table 2.5 presents the change in per capita (mean) income for each county within the Northeastern Nevada Regional Development Authority area, for the region as a whole, for the state of Nevada, and for the United States between 2013 and 2017.

<b>Table 2.5 – Per Capita (Mean) Income, Individuals (2017 Inflation-Adjusted Dollars) Communities within the Northeastern Nevada Regional Development Authority</b>				
<b>Community</b>	<b>2013</b>	<b>2017</b>	<b>2013-2017 Actual Change</b>	<b>2013-2017 Percent Change</b>
<b>Elko County</b>	\$28,358	\$32,498	\$4,140	14.6%
<b>Eureka County</b>	\$28,056	\$35,606	\$7,550	26.9%
<b>Humboldt County</b>	\$26,515	\$29,215	\$2,700	10.2%
<b>Lander County</b>	\$29,800	\$30,256	\$456	1.5%
<b>White Pine County</b>	\$24,435	\$25,350	\$915	3.7%
<b>Northeastern Nevada Region (Average)</b>	<b>\$27,433</b>	<b>\$30,585</b>	<b>\$3,152</b>	<b>11.5%</b>
<b>State of Nevada</b>	\$26,589	\$28,450	\$1,861	7.0%
<b>United States</b>	\$28,155	\$31,177	\$3,022	10.7%

*Source: U.S. Census Bureau; American Community Survey, 5-Year Estimates; 2013 and 2017*

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Like median household income and median family income, per capita income for the entire Northeastern Nevada region increased between 2013 and 2017, increasing from an estimated \$27,433 in 2013 to an estimated \$30,585 in 2017, a net increase of approximately \$3,152 or 11.5 percent. Statewide, per capita income for the entire state of Nevada increased from \$26,589 in 2013 to \$28,450 in 2017, a net increase of \$1,861 or 7.0 percent. Nationwide, per capita income for the entire United States increased from \$28,155 in 2013 to \$31,177 in 2017, a net increase of \$3,022 or 10.7 percent.

Per capita income for each of the five counties within the Northeastern Nevada region also increased between 2013 and 2017. In Elko County, per capita income increased from \$28,358 in 2013 to \$32,498 in 2017, a significant net increase of \$4,140 or 14.6 percent. In Eureka County, per capita income increased from \$28,056 in 2013 to \$35,606 in 2017, a significant increase of \$7,550 or 26.9 percent. In Humboldt County, per capita income increased from \$26,515 in 2013 to \$29,215 in 2017, a significant net increase of \$2,700 or 10.2 percent. In Lander County, per capita income increased from \$29,800 in 2013 to \$30,256 in 2017, a marginal increase of \$456 or 1.5 percent. In White Pine County, per capita income increased from \$24,435 in 2013 to \$25,350 in 2017, a net increase of \$915 or 3.7 percent.

#### 2.1.f Civilian Workforce (Individuals 16 Years or Older)

Table 2.6 presents the change in the relative size of the civilian workforce (individuals living in the community that are 16 years of age or older) for each county within the Northeastern Nevada Regional Development Authority area, for the region as a whole, for the state of Nevada, and for the United States between 2013 and 2017.

Between 2013 and 2017, the total civilian workforce living throughout the entire Northeastern Nevada region increased by 2,324 total individuals or 3.6 percent, increasing from 63,925 total individuals in 2013 to 66,249 total individuals in 2017. Statewide, the total civilian workforce living throughout the entire state of Nevada increased from approximately 2.1 million total individuals in 2013 to approximately 2.3 million total individuals in 2017, a net increase of 148,945 total individuals or 6.9 percent. Nationwide, the total civilian workforce for the entire United States increased from approximately 246.2 million total individuals in 2013 to approximately 255.8 million total individuals in 2017, a net increase of approximately 9.6 million total individuals or 3.9 percent.

Except for White Pine County, the civilian workforce for each individual county within the Northeastern Nevada region increased between 2013 and 2017. In Elko County, the civilian workforce living throughout the county increased from 37,364 total individuals in 2013 to 39,478 total individuals in 2017, a net increase of 2,114 total individuals or 5.7 percent. In Eureka County, the civilian workforce living throughout the county increased from 1,339 total individuals in 2013 to 1,393 total individuals in 2017, a marginal increase of 54 total individuals or 4.8 percent. In Humboldt County, the civilian workforce living throughout the county increased from 12,697 total individuals in 2013 to 12,924 total individuals in 2017, a net increase of just 227 total individuals or 1.8 percent. In Lander County, the civilian workforce living throughout the county increased from 4,397 total individuals in 2013 to 4,422 total individuals in 2017, a marginal increase of just 25 total individuals or 0.6 percent.

<b>Table 2.6 – Civilian Workforce (Individuals 16 Years or Older) Communities within the Northeastern Nevada Regional Development Authority</b>				
<b>Community</b>	<b>2013</b>	<b>2017</b>	<b>2013-2017 Actual Change</b>	<b>2013-2017 Percent Change</b>
<b>Elko County</b>	37,364	39,478	2,114	5.7%
<b>Eureka County</b>	1,339	1,393	54	4.0%
<b>Humboldt County</b>	12,697	12,924	227	1.8%
<b>Lander County</b>	4,397	4,422	25	0.6%
<b>White Pine County</b>	8,128	8,032	-96	-1.2%
<b>Northeastern Nevada Region</b>	<b>63,925</b>	<b>66,249</b>	<b>2,324</b>	<b>3.6%</b>
<b>State of Nevada</b>	2,143,541	2,292,486	148,945	6.9%
<b>United States</b>	246,191,954	255,797,692	9,605,738	3.9%

*Source: U.S. Census Bureau; American Community Survey, 5-Year Estimates; 2013 and 2017*

In White Pine County, the only county to see a net decline in the existing civilian workforce between 2013 and 2017, the total civilian workforce decreased marginally by 96 total individuals or by -1.2 percent. Between 2013 and 2017, the total civilian workforce living throughout White Pine County decreased from 8,128 total individuals in 2013 to 8,032 total individuals in 2017.

#### 2.1.g Civilian Unemployment Rate (Individuals 16 Years or Older)

Table 2.7 presents the change in the civilian unemployment rate (for individuals living in the community that are 16 years of age or older) for each county within the Northeastern Nevada Regional Development Authority area, for the region as a whole, for the state of Nevada, and for the United States between 2013 and 2017. Note that the civilian unemployment rate for Eureka County for 2017 was not available at the time of publication of this University Center for Economic Development technical report.

Between 2013 and 2017, the estimated civilian unemployment rate for the entire Northeastern Nevada region decreased significantly, decreasing from an estimated 8.3 percent in 2013 to an estimated 6.4 percent in 2017, a net decrease of 1.9 percent or 22.8 percent. Statewide, the civilian unemployment rate for the entire state of Nevada decreased significantly, decreasing from 12.5 percent in 2013 to 8.0 percent in 2017, a dramatic net decrease of 4.5 percent or percentage decrease of -36.0 percent. Nationwide, the civilian unemployment rate for the entire United States decreased significantly as well, decreasing from 9.7 percent in 2013 to 6.6 percent in 2017, a substantial net decrease of 3.1 percent or -32.0 percent.

<b>Table 2.7 – Civilian Unemployment Rate (Individuals 16 Years or Older) Communities within the Northeastern Nevada Regional Development Authority</b>				
<b>Community</b>	<b>2013</b>	<b>2017</b>	<b>2013-2017 Actual Change</b>	<b>2013-2017 Percent Change</b>
<b>Elko County</b>	5.7%	4.4%	-1.3%	-22.8%
<b>Eureka County</b>	5.4%	-	-	-
<b>Humboldt County</b>	9.1%	7.3%	-1.8%	-19.8%
<b>Lander County</b>	11.2%	7.6%	-3.6%	-32.1%
<b>White Pine County</b>	9.9%	6.2%	-3.7%	-37.4%
<b>Northeastern Nevada Region (Average)</b>	<b>8.3%</b>	<b>6.4%</b>	<b>-1.9%</b>	<b>-22.8%</b>
<b>State of Nevada</b>	12.5%	8.0%	-4.5%	-36.0%
<b>United States</b>	9.7%	6.6%	-3.1%	-32.0%

*Source: U.S. Census Bureau; American Community Survey, 5-Year Estimates; 2013 and 2017*

The civilian unemployment rate for each county within the Northeastern Nevada region, that data was available for, decreased significantly between 2013 and 2017. In Elko County, the civilian unemployment rate decreased from 5.7 percent in 2013 to 4.4 percent in 2017, a net decrease of 1.3 percent or -22.8 percent overall. The civilian unemployment rate for Eureka County in 2013 was 5.4 percent and, given the trend in the civilian unemployment rate for the entire Northeastern Nevada region, it is likely that the civilian unemployment rate of Eureka County also declined between 2013 and 2017.

In Humboldt County, the civilian unemployment rate decreased from 9.1 percent in 2013 to 7.3 percent in 2017, a net decrease of 1.8 percent or -19.8 percent overall. In Lander County, the civilian unemployment rate decreased from 11.2 percent in 2013 to 7.6 percent in 2017, a net decrease of 3.6 percent or -32.1 percent overall. In White Pine County, the civilian unemployment rate decreased from 9.9 percent in 2013 to 6.2 percent in 2017, a net decrease of 3.7 percent or -37.4 percent overall.

## **2.2 Industry and Occupation Sector Data for the Northeastern Nevada Regional Development Authority Area**

Table 2.8 presents the ten largest industry sectors for the five-county Northeastern Nevada Regional Development Authority area measured by the total number of jobs the industry sector,

as a whole, generated in 2018. The total number of jobs generated by each individual industry sector for 2013 and 2018 is presented along with the location quotient and the industry sector's contribution to Gross Regional Product for 2018. Similar data for the Administrative and Support and Waste Management and Remediation Services industry sector is highlighted for comparison.

<b>Table 2.8 – Top Ten Industry Sectors for the Northeastern Nevada Regional Development Authority Area 2013 and 2018</b>						
<b>Industry Sector</b>	<b>Total Jobs 2013</b>	<b>Total Jobs 2018</b>	<b>Change in Total Jobs</b>	<b>Percent Change in Total Jobs</b>	<b>Location Quotient 2018</b>	<b>Gross Regional Product 2018</b>
Mining, Quarrying, and Oil and Gas	12,267	11,498	-769	-6.0%	61.97	\$3.86 Billion
Government	7,606	7,713	107	1.0%	1.15	\$685.97 Million
Accommodation and Food Services	7,278	6,792	-486	-7.0%	1.77	\$370.68 Million
Retail Trade	4,100	4,070	-30	-1.0%	0.90	\$273.44 Million
Construction	2,687	2,291	-396	-15.0%	0.92	\$203.43 Million
Health Care and Social Assistance	1,967	2,151	184	9.0%	0.38	\$133.41 Million
Wholesale Trade	1,394	1,466	72	5.0%	0.89	\$621.18 Million
Other Services (Except Public Administration)	1,415	1,370	-45	-3.0%	0.64	\$84.83 Million
Transportation and Warehousing	1,207	1,191	-16	-1.0%	0.74	\$101.17 Million
Agriculture, Forestry, Fishing and Hunting	1,119	1,170	51	5.0%	2.22	\$118.28 Million
<b>Admin. and Support and Waste Mgt. and Remediation</b>	<b>1,168</b>	<b>949</b>	<b>-219</b>	<b>-19.0%</b>	<b>0.34</b>	<b>\$57.62 Million</b>
<b>Total, Northeastern Nevada Area</b>	<b>42,208</b>	<b>40,661</b>	<b>-1,547</b>	<b>-4.0%</b>	<b>-</b>	<b>\$6.51 Billion</b>

*Source: Nevada Governor's Office of Economic Development, Northeastern Nevada Regional Development Authority Aggregate Report, Emsi Q2 2019 Data Set*

Between 2013 and 2018, the total number of jobs created and provided by the ten largest industry sectors within the Northeastern Nevada area plus the total number of jobs created and provided within the Administrative and Support and Waste Management and Remediation Services industry sector decreased from an estimated 42,208 total jobs in 2013 to an estimated 40,661 total jobs in 2018, a net decrease of 1,547 or -4.0 percent. The total contribution to Gross Regional Product (the total amount of economic output generated by all industry sectors within the Northeastern Nevada area) by these 11 industry sectors in 2018 was an estimated \$6.51 billion.

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In 2018, the Administrative and Support and Waste Management and Remediation industry sector generated an estimated 949 total jobs, a net decrease of 219 total jobs or -19.0 percent from the 1,168 total jobs generated within this industry sector in 2013. This accounted for just 2.3 percent of the 40,661 total jobs generated by the 11 industry sectors listed in Table 2.8. The Administrative and Support and Waste Management and Remediation industry sector generated an estimated total of approximately \$57.62 million in economic output in 2018, accounting for just 0.9 percent of the five-county Northeastern Nevada area's Gross Regional Product for the 11 industry sectors listed in Table 2.8 of approximately \$6.51 billion.

Comparatively, the five-county area's largest industry sector, the Mining, Quarrying, and Oil and Gas Extraction industry sector, generated an estimated 11,498 total jobs in 2018, a net decrease of 769 total jobs or -6.0 percent from the 12,267 total jobs generated by this industry sector in 2013. This accounted for approximately 28.3 percent of the 40,661 total jobs generated by the 11 industry sectors listed in Table 2.8. The Mining, Quarrying, and Oil and Gas Extraction industry sector generated an estimated total of approximately \$3.86 billion in economic output in 2018, accounting for 59.3 percent of the five-county Northeastern Nevada area's Gross Regional Product for the 11 industry sectors listed in Table 2.. In-terms of total jobs generated and total economic output, the Mining, Quarry, and Oil and Gas Extraction industry sector was the single largest industry sector within the five-county Northeastern Nevada area in 2018.

A location quotient greater than 1.0 indicates that the industry sector in the local geographic area is a *net exporter*, in that the total production and output of all firms within the industry sector in the geographic area produces more goods and services than can be consumed locally. Surplus goods and services are *exported* out of the local geographic area and cash is imported into the local geographic area. A location quotient less than 1.0 indicates that the industry sector in the local geographic area is a *net importer*, in that total production and output of all firms within the industry sector in the geographic area does not produce enough goods and services to satisfy local consumption meaning that goods and services have to *imported* into the local geographic area and, subsequently, cash is exported out of the local geographic area.

In 2018, the location quotient for the Mining, Quarrying, and Oil and Gas Extraction industry sector was 61.97, indicating that the Mining, Quarrying, and Oil and Gas Extraction industry sector was a significant *net exporter* of goods and services. Of the 11 industry sectors listed in Table 2.8, this industry sector had the single largest location quotient in 2018. The Agriculture, Forestry, Fishing and Hunting industry had the second largest location quotient, 2.22, in 2018 and the Accommodation and Food Services industry sector had the third largest location quotient, 1.77, in 2018. While these three industry sectors *export* a significant portion of their products and services and generate *positive cash flows* into the five-county Northeastern Nevada area, the Administrative and Support and Waste Management and Remediation Services industry sector was a *net importer* in 2018 with a location quotient of just 0.34. The location quotient of 0.34 for the Administrative and Support and Waste Management and Remediation Services industry sector suggests that, in 2018, waste products generated within the five-county area had to be shipped to processing, recycling and/or waste storage facilities outside the Northeastern Nevada area thereby creating a *negative cash flow* of dollars moving outside the area to cover the processing, recycling and/or waste storage service costs. In order to reverse this negative cash flow within the Administrative and Support and Waste Management and Remediation

Services industry sector, the area will have to develop processing, recycling and/or waste storage facilities capable of managing and using waste products generated within the five-county Northeastern Nevada area.

Table 2.9 presents the ten largest occupation sectors for the five-county Northeastern Nevada Regional Development Authority area measured by the total number of people employed by the occupation sector in 2018. The total number of people employed within each occupation sector for 2013 and 2018 is presented along with the location quotient and the 2017 median hourly earning per worker for each individual occupation sector. There is no directly comparable occupation sector for the Administrative and Support and Waste Management and Remediation Services industry sector for the existing occupational sectors within the Northeastern Nevada Regional Development Authority area. Comparable and analogue occupation sectors are, however, highlighted for the Mining, Quarrying, and Oil and Gas Extraction industry sector.

<b>Table 2.9 – Top Ten Occupation Sectors for the Northeastern Nevada Regional Development Authority Area 2013 and 2018</b>						
<b>Industry Sector</b>	<b>Total Jobs 2013</b>	<b>Total Jobs 2018</b>	<b>Change in Total Jobs</b>	<b>Percent Change in Total Jobs</b>	<b>Location Quotient 2018</b>	<b>Median Hourly Earning 2018</b>
Construction and Extraction	6,796	6,223	-573	-8.0%	3.04	\$27.38
Office and Administrative Services	4,835	4,576	-259	-5.0%	0.70	\$16.21
Installation, Maintenance, and Repair	4,666	4,563	-103	-2.0%	2.61	\$28.86
Transportation and Material Moving	3,949	3,909	-40	-1.0%	1.28	\$23.07
Food Preparation and Serving Related	4,288	3,884	-404	-9.0%	1.04	\$9.78
Sales and Related	3,521	3,483	-38	-1.0%	0.79	\$11.74
Management	2,368	2,347	-21	-1.0%	0.93	\$33.92
Education, Training, and Library	1,831	2,017	186	10.0%	0.79	\$22.52
Production	2,103	2,007	-96	-5.0%	0.77	\$25.04
Building and Grounds Cleaning and Maintenance	2,100	1,940	-160	-8.0%	1.18	\$25.04
<b>Total, Northeastern Nevada Area</b>	<b>36,457</b>	<b>34,949</b>	<b>-1,508</b>	<b>-4.0%</b>	<b>-</b>	<b>\$22.36 (Average)</b>

*Source: Nevada Governor's Office of Economic Development, Northeastern Nevada Regional Development Authority Aggregate Report, Emsi Q2 2019 Data Set*

The comparable occupation sectors to the Mining, Quarrying, and Oil and Gas industry sector for the Northeastern Nevada area are the Construction and Extraction occupation sector and Transportation and Material Moving occupation sector. Between 2013 and 2018, the total number of people employed across the top ten occupation sectors listed in Table 2.9 for the



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Northeastern Nevada area decreased from an estimated 36,457 total people employed in 2013 to an estimated 34,949 total people employed in 2018, a net decrease of 1,508 total people employed or -4.0 percent. In 2017, the average median wage paid to workers within the largest ten occupation sectors listed in Table 2.9 was \$22.36 per worker. Comparatively, the highest median hourly wage paid in 2017 was \$33.92 in the Management occupation sector and the lowest median hourly wage paid in 2017 was \$9.78 in the Food Preparation and Serving Related occupation sector.

Between 2013 and 2018, the total number of people employed in the Construction and Extraction occupation sector decreased from an estimated 6,796 total people employed in 2013 to an estimated 6,223 total people employed in 2018, a significant net decrease of 573 total people employed or -8.0 percent. The median hourly earning paid to individual employees in 2017 in the Construction and Extraction occupation sector was \$27.38 and the location quotient for this occupation sector in 2018 was 3.04, indicating that the Construction and Extraction occupation sector was a *net exporter* and generated positive cash flows of financial resources into the five-county Northeastern Nevada area. In-terms of total employment in 2018, the Construction and Extraction occupation sector was the single largest occupation sector in the Northeastern Nevada area, paid the third highest median hourly wage in 2017, and had the single largest location quotient in 2018 among the top ten occupation sectors within the Northeastern Nevada area.

Between 2013 and 2018, the total number of people employed in the Transportation and Material Moving occupation sector decreased from an estimated 3,949 total people employed in 2013 to an estimated 3,909 total people employed in 2018, a net decrease of just 40 total people employed or -1.0 percent. The median hourly earning paid to individual employees in 2017 in the Transportation and Material Moving occupation sector was \$23.07 and the location quotient for this occupation sector in 2018 was 1.28, indicating that the Transportation and Material Moving occupation sector was a *net exporter* and generated positive cash flows of financial resources into the five-county Northeastern Nevada area. In-terms of total employment in 2018, the Transportation and Material Moving occupation sector was the fourth largest occupation sector in the Northeastern Nevada area, paid the fifth highest median hourly wage in 2017, and had the third largest location quotient in 2018 among the top ten occupation sectors within the Northeastern Nevada area.

Combined, the total number of people employed in the Construction and Extraction occupation sector and the Transportation and Material Moving occupation sector decreased from an estimated 10,745 total people employed in 2013 to an estimated 10,132 total people employed in 2018, a net decrease of 613 total people employed or -5.7 percent. In 2018, the total number of people employed in the Construction and Extraction occupation sector and the Transportation and Material Moving occupation sector combined accounted for 29.0 percent of the 34,949 total people employed and working in all ten of the occupation sectors listed in Table 2.9. As the closest comparable and analogue occupation sectors to the Mining, Quarrying, and Oil and Gas Extraction industry sector, the Construction and Extraction occupation sector and the Transportation and Material Moving occupation sector both account for a significant portion of total employment within the five-county Northeastern Nevada area and are collectively responsible for a significant portion of the area's overall economic base as is the Mining, Quarrying, and Oil and Gas Extraction industry sector examined previously in Table 2.8.

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## 2.3 Waste Levels for the Northeastern Nevada Regional Development Authority Area

This sub-section presents a general estimation of potential recyclable waste generated by mines operating within the Northeastern Nevada Regional Development Authority as well as a general estimation of the total amount of waste collected by landfills operating within the Northeastern Nevada Regional Development Authority area. Because the single largest industry sector within the Northeastern Nevada Regional Development Authority area is the Mining, Quarrying, and Oil and Gas Extraction industry sector, and by proxy the Construction and Extraction occupation sector and the Transportation and Material Moving occupation sector, it is assumed that the Mining, Quarry, and Oil and Gas Extraction industry sector would be the single largest *single point source* of commercial and industrial wastes generated within the five-county Northeastern Nevada area. Non-single point sources of municipal solid waste, largely generated by residential properties and individual residents, likely remain the single largest total source of overall waste materials being disposed of in area landfills located within the five-county Northeastern Nevada area.

### 2.3.a Potential Recyclable Waste Generated by Mines Operating within the Northeastern Nevada Regional Development Authority Area

Nevada Gold Mines is a joint venture between Barrick Gold Corporation and the Newmont Corporation operating within the state of Nevada that operates seven separate mining operations in the five-county Northeastern Nevada area including Long Canyon, the Carlin Complex (Barrick Legacy), the Carlin Complex (Newmont Legacy), Cortez, Phoenix, TC, and TR. Using recyclable waste data provided by Nevada Gold Mines, Table 2.10 presents the combined total amount of recyclable waste for all of Nevada Gold Mines' seven sites operating within the Northeastern Nevada area for 2018. Appendix A of this University Center for Economic Development technical report presents the total amount of waste produced for each of Nevada Gold Mines' seven operating sites in Northeastern Nevada.

In 2018, Nevada Gold Mines' seven individual operating mine sites within the five-county Northeastern Nevada area generated approximately 41,981.60 metric tonnes of potentially recyclable waste. Metal was the single largest type of recyclable waste, generating an estimated 35,191.67 metric tonnes of waste and accounting for approximately 83.8 percent of all waste measured in metric tonnes generated by Nevada Gold Mines' seven individual operating mine sites within the Northeastern Nevada area. Paper was the second largest type of recyclable waste in 2018, generating an estimated 2,771.45 metric tonnes of waste and accounting for approximately 6.6 percent of all waste measured in metric tonnes generated by Nevada Gold Mines. Plastic was the third largest type of recyclable waste in 2018, generating an estimated 1,847.10 metrics tonnes of waste and Cardboard was the fourth largest type of recyclable waste in 2018, generating an estimated 1,847.10 metric tonnes of waste. Both Plastic and Cardboard accounted for approximately 4.4 percent of all waste measured in metric tonnes generated by Nevada Gold Mines' various mine sites operating within the Northeastern Nevada area.

<b>Table 2.10 – Recyclable Waste Types and Amounts Produced Nevada Gold Mines – Long Canyon, Carlin Complex (Barrick Legacy), Carlin Complex (Newmont Legacy), Cortez, Phoenix, TC, and TR Combined 2018</b>	
<b>Recyclable Waste Type</b>	<b>Amount Produced (in Number of Units, Kilograms, Cubic Meters or Metric Tons/Tonnes)</b>
Plastic	1,847.23 (Metric Tonnes)
Paper	2,771.45 (Metric Tonnes)
Pallets	8.26 (Metric Tonnes)
Cardboard (Onsite)	1,847.10 (Metric Tonnes)
Cardboard (Offsite)	52.83 (Metric Tonnes)
HDPE Pipe/Liner	112.72 (Metric Tonnes)
Used Oil	4,352.48 (Cubic Meters)
Used Antifreeze	186.04 (Cubic Meters)
Batteries (Lithium)	0.18 (Metric Tonnes)
Batteries (Lead)	4.35 (Metric Tonnes)
Batteries (Alkaline)	-
Batteries	67.49 (Metric Tonnes)
Electronics	20.44 (Metric Tonnes)
Lamps/Bulbs	0.882 (Metric Tonnes)
Ink Cartridges	234.00 (Number of Units)
Ink Cartridges	-
Food Waste	54.15 (Metric Tonnes)
Tires – Large (Onsite)	1,663.00 (Number of Units)
Tires – Large	1,000.00 (Number of Units)
Tires – LV	4,102.07 (Number of Units)
Tires – LV	3,206.37 (Number of Units)
Metal	35,191.67 (Metric Tonnes)
Totes/Containers	2.75 (Metric Tonnes)
Aluminum Cans	0.10 (Metric Tonnes)
<b>TOTAL (of Just Metric Tonnes)</b>	<b>41,981.60 (Metric Tones)</b>

Source: Nevada Gold Mines, 2019

Other notable types of potentially recyclable materials generated by Nevada Gold Mines’ seven individual operating mine sites within the Northeastern Nevada area combined in 2018 included 4,102.07 total units of Tires-LV and an additional 3,206.37 total units of Tires-LV. An additional 1,663.00 total units of Tires – Large (Onsite) and an additional 1,000.00 total units of Tires – Large were also generated from operations managed by Nevada Gold Mines in Northeastern Nevada in 2018. A total of 4,352.48 cubic meters of Used Oil and 186.04 total cubic meters of Used Antifreeze were also generated by Nevada Gold Mines’ seven individual operating mine sites within the Northeastern Nevada area combined in 2018.

### 2.3.b Generation of Waste Collected by Landfills Operating within the Northeastern Nevada Regional Development Authority Area

Table 2.11 presents the total amount of both municipal solid waste (MSW) and industrial waste collected by landfills operating within each of the five counties within the Northeastern Nevada area for each year between 2013 and 2018 measured in metric tonnes.

<b>Table 2.11 – Total Municipal Solid Waste (MSW) and Industrial Waste Collected by Landfills within the Northeastern Nevada Regional Development Authority Area In Metric Tonnes, 2013 through 2018</b>								
<b>Jurisdiction and Type</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2013-2018 Total Change</b>	<b>2013- 2018 Percent Change</b>
Humboldt Industrial	119,612.75	125,237.14	105,474.28	93,760.81	155,063.41	90,293.26	-29,319.49	-24.5%
Humboldt MSW	19,177.15	19,207.66	19,792.73	19,308.25	26,753.15	24,465.50	5,288.35	27.6%
<b>Humboldt Total</b>	<b>138,789.90</b>	<b>144,444.81</b>	<b>125,267.01</b>	<b>113,069.06</b>	<b>181,816.56</b>	<b>114,758.76</b>	<b>-24,031.14</b>	<b>-17.3%</b>
Elko Industrial	13,364.25	8,555.47	16,319.38	16,959.81	16,198.60	18,476.81	5,112.56	38.3%
Elko MSW	60,248.36	58,714.28	47,319.82	48,267.83	49,248.19	51,565.59	-8,682.77	-14.4%
<b>Elko Total</b>	<b>73,612.61</b>	<b>67,269.75</b>	<b>63,639.20</b>	<b>65,227.64</b>	<b>65,446.78</b>	<b>70,042.40</b>	<b>-3,570.21</b>	<b>-4.8%</b>
Eureka Industrial	7,427.62	10,286.12	3,595.99	6,833.87	7,566.88	11,124.13	3,696.51	49.8%
Eureka MSW	1,005.32	1,080.06	988.09	983.25	861.58	657.85	-347.48	-34.6%
<b>Eureka Total</b>	<b>8,432.95</b>	<b>11,366.18</b>	<b>4,584.08</b>	<b>7,817.12</b>	<b>8,428.46</b>	<b>11,781.97</b>	<b>3,349.03</b>	<b>39.7%</b>
Lander Industrial	20,660.63	19,559.62	24,468.23	20,831.30	101,291.80	31,086.10	10,425.47	50.5%
Lander MSW	1,847.12	1,712.27	1,640.42	1,765.06	2,124.45	2,218.61	371.49	20.1%
<b>Lander Total</b>	<b>22,507.75</b>	<b>21,271.88</b>	<b>26,108.65</b>	<b>22,596.36</b>	<b>103,416.25</b>	<b>33,304.71</b>	<b>10,796.96</b>	<b>48.0%</b>
White Pine Industrial	6,142.93	6,750.29	6,010.81	5,424.01	6,116.39	6,779.92	636.99	10.4%
White Pine MSW	7,001.16	7,088.97	7,048.76	6,876.83	6,744.63	6,464.42	-536.75	-7.7%
<b>White Pine Total</b>	<b>13,144.09</b>	<b>13,839.26</b>	<b>13,059.57</b>	<b>12,300.84</b>	<b>12,861.02</b>	<b>13,244.34</b>	<b>100.24</b>	<b>0.8%</b>
NNRDA Industrial	167,208.18	170,388.64	155,868.69	143,809.80	286,237.07	157,760.22	-9,447.97	-5.7%
NNRDA MSW	89,279.11	87,803.24	76,789.82	77,201.23	85,731.99	85,371.97	-3,907.15	-4.4%
<b>NNRDA Total</b>	<b>256,487.30</b>	<b>258,191.88</b>	<b>232,658.51</b>	<b>221,011.02</b>	<b>371,969.06</b>	<b>243,132.18</b>	<b>-13,355.11</b>	<b>-5.2%</b>

Source: Nevada Division of Environmental Protection, Bureau of Waste Management

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Note that the estimations of waste collected by landfills operating within the Northeastern Nevada Regional Development Authority area presented in Table 2.11 do not provide any information regarding the *source* of the waste produced. It is possible that municipal solid waste and commercial and industrial waste being generating from locations outside the five-county Northeastern Nevada area are being disposed of in landfills operating within the five-county Northeastern Nevada area. The estimations provided here only illustrate how much total waste, including both municipal solid waste and commercial and industrial waste, has been and is currently making its way into landfills operating within the five-county Northeastern Nevada area regardless of the waste's geographic source location.

For the entire five-county Northeastern Nevada area, the total amount of industrial waste and municipal solid waste collected by area landfills combined decreased from an estimated 256,487.30 metric tonnes of total waste collected in 2013 to an estimated 243,132.18 metric tonnes of total waste collected in 2018, a net decrease of 13,355.11 metric tonnes or -5.2 percent. The amount of just industrial waste collected by area landfills decreased from an estimated 167,208.18 metrics tonnes of total waste collected in 2013 to an estimated 157,760.22 metric tonnes of total waste collected in 2018, a net decrease of 9,447.97 metric tonnes or -5.7 percent. The amount of just municipal solid waste collected by area landfills decreased from an estimated 89,279.11 metrics tonnes of total waste collected in 2013 to an estimated 85,371.97 metric tonnes of total waste collected in 2018, a net decrease of 3,907.15 metric tonnes or -4.4 percent. For the entire five-county Northeastern Nevada area, industrial waste represented a significant majority of total waste collected by area landfills. Between 2013 and 2018, 67.5 percent, on average per year, of all waste entering Northeastern Nevada area landfills was industrial waste and just 32.5 percent, on average per year, of all waste entering Northeastern Nevada area landfills was municipal solid waste.

In Humboldt County, the total amount of industrial waste and municipal solid waste collected by landfills operating within Humboldt County decreased from 138,789.90 metric tonnes of total waste collected in 2013 to 114,758.76 metric tonnes of total waste collected in 2018, a net decrease of 24,031.14 metric tonnes or -17.3 percent. The amount of just industrial waste collected by landfills operating within Humboldt County decreased from 119,612.75 metric tonnes of total waste collected in 2013 to 90,293.26 metric tonnes of total waste collected in 2018, a net decrease of 29,319.49 metric tonnes or -24.5 percent. The amount of just municipal solid waste collected by landfills operating within Humboldt County increased from 19,177.15 metric tonnes of total waste collected in 2013 to an estimated 24,465.50 metric tonnes of total waste collected in 2018, a net increase of 5,288.35 metric tonnes or 27.6 percent. For just Humboldt County, industrial waste represented a significant majority of total waste collected by landfills operating within Humboldt County. Between 2013 and 2018, 84.0 percent, on average per year, of all waste entering Humboldt County landfills was industrial waste and just 16.0 percent, on average per year, of all waste entering Humboldt County landfills was municipal solid waste.

In Elko County, the total amount of industrial waste and municipal solid waste collected by landfills operating within Elko County decreased from an estimated 73,612.61 metric tonnes of total waste collected in 2013 to an estimated 70,042.40 metric tonnes of total waste collected in

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2018, a net decrease of 3,570.21 metric tonnes or -4.8 percent. The amount of just industrial waste collected by landfills operating within Elko County increased from an estimated 13,364.25 metric tonnes of total waste in 2013 to an estimated 18,476.81 metric tonnes of total waste in 2018, a net increase of 5,112.56 metric tonnes or 38.3 percent. The amount of just municipal solid waste collected by landfills operating within Elko County decreased from an estimated 60,248.36 metric tonnes of total waste in 2013 to an estimated 51,565.59 metric tonnes of total waste in 2018, a net decrease of 8,682.77 metric tonnes or -14.4 percent. For just Elko County, municipal solid waste represented a significant majority of total waste collected by landfills operating within Elko County. Between 2013 and 2018, 77.7 percent, on average per year, of all waste entering Elko County landfills was municipal solid waste and just 22.3 percent, on average per year, of all waste entering Elko County landfills was industrial waste.

In Eureka County, the total amount of industrial waste and municipal solid waste collected by landfills operating within Eureka County increased from an estimated 8,432.95 metric tonnes of total waste collected in 2013 to an estimated 11,781.97 metric tonnes of total waste collected in 2018, a net increase of 3,349.03 metric tonnes or 39.7 percent. The amount of just industrial waste collected by landfills operating within Eureka County increased from an estimated 7,472.62 metric tonnes of total waste in 2013 to an estimated 11,124.13 metric tonnes of total waste in 2018, a net increase of 3,696.51 metric tonnes or 49.8 percent. The amount of just municipal solid waste collected by landfills operating within Eureka County decreased from an estimated 1,005.32 metric tonnes of total waste in 2013 to an estimated 657.85 metric tonnes of total waste in 2018, a net decrease of 347.48 metric tonnes or -34.6 percent. For just Eureka County, industrial waste represented a significant majority of total waste collected by landfills operating within Eureka County. Between 2013 and 2018, 88.1 percent, on average per year, of all waste entering Eureka County landfills was industrial waste and just 11.9 percent, on average per year, of all waste entering Eureka County landfills was municipal solid waste.

In Lander County, the total amount of industrial waste and municipal solid waste collected by landfills operating within Lander County increased from an estimated 22,507.75 metric tonnes of total waste collected in 2013 to an estimated 33,304.71 metric tonnes of total waste collected in 2018, a net increase of 10,796.96 metric tonnes or 48.0 percent. The amount of just industrial waste collected by landfills operating within Lander County increased from an estimated 20,660.63 metric tonnes of total waste in 2013 to an estimated 31,086.10 metric tonnes of total waste in 2018, a net increase of 10,425.47 total metric tonnes or 50.5 percent. The amount of just municipal solid waste collected by landfills operating within Lander County increased from an estimated 1,874.12 metric tonnes of total waste in 2013 to an estimated 2,218.61 metric tonnes of total waste in 2018, a net increase of 371.49 metric tonnes or 20.1 percent. For just Lander County, industrial waste represented a significant majority of total waste collected by landfills operating within Lander County. Between 2013 and 2018, 93.5 percent, on average per year, of all waste entering Lander County landfills was industrial waste and just 6.5 percent, on average per year, of all waste entering Lander County landfills was municipal solid waste.

In White Pine County, the total amount of industrial waste and municipal waste collected by landfills operating within White Pine County increased from an estimated 13,144.09 metric tonnes of total waste in 2013 to an estimated 13,244.34 metric tonnes of total waste, a slight increase of just 100.24 metric tonnes or 0.8 percent. The amount of just industrial waste

collected by landfills operating within White Pine County increased from an estimated 6,412.93 metric tonnes of total waste in 2013 to an estimated 6,779.92 metric tonnes of total waste in 2018, a net increase of 636.99 metric tonnes or 10.4 percent. The amount of just municipal solid waste collected by landfills operating within White Pine County decreased from an estimated 7,001.16 metric tonnes of total waste in 2013 to an estimated 6,464.42 metric tonnes of total waste in 2018, a net decrease of 536.75 metric tonnes or -7.7 percent. For just White Pine County, municipal solid waste represented a slight majority of total waste collected by landfills operating within White Pine County. Between 2013 and 2018, 52.6 percent, on average per year, of all waste entering White Pine County landfills was municipal solid waste and 47.4 percent, on average per year, of all waste entering White Pine County landfills was industrial waste.

Table 2.12 presents the average annual growth rate for both the amount of municipal solid waste (MSW) and industrial waste collected by landfills operating within each of the five counties within the Northeastern Nevada area for each year between 2013 and 2018.

<b>Table 2.12 – Annual Average Growth Rate of Municipal Solid Waste (MSW) and Industrial Waste Collected by Landfills within the Northeastern Nevada Regional Development Authority Area 2013 through 2018</b>							
<b>Jurisdiction and Type</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2013-2018 Average</b>
Humboldt Industrial	-	4.7%	-15.8%	-11.1%	65.4%	-41.8%	0.3%
Humboldt MSW	-	0.2%	3.0%	-2.4%	38.6%	-8.6%	6.2%
<b>Humboldt Total</b>	-	<b>4.1%</b>	<b>-13.3%</b>	<b>-9.7%</b>	<b>60.8%</b>	<b>-36.9%</b>	<b>1.0%</b>
Elko Industrial	-	-36.0%	90.7%	3.9%	-4.5%	14.1%	13.7%
Elko MSW	-	-2.5%	-19.4%	2.0%	2.0%	4.7%	-2.6%
<b>Elko Total</b>	-	<b>-8.6%</b>	<b>-5.4%</b>	<b>2.5%</b>	<b>0.3%</b>	<b>7.0%</b>	<b>-0.8%</b>
Eureka Industrial	-	38.5%	-65.0%	90.0%	10.7%	47.0%	24.2%
Eureka MSW	-	7.4%	-8.5%	-0.5%	-12.4%	-23.6%	-7.5%
<b>Eureka Total</b>	-	<b>34.8%</b>	<b>-59.7%</b>	<b>70.5%</b>	<b>7.8%</b>	<b>39.8%</b>	<b>18.7%</b>
Lander Industrial	-	-5.3%	25.1%	-14.9%	386.2%	-69.3%	64.4%
Lander MSW	-	-7.3%	-4.2%	7.6%	20.4%	4.4%	4.2%
<b>Lander Total</b>	-	<b>-5.5%</b>	<b>22.7%</b>	<b>-13.5%</b>	<b>357.7%</b>	<b>-67.8%</b>	<b>58.7%</b>
White Pine Industrial	-	9.9%	-11.0%	-9.8%	12.8%	10.8%	2.6%
White Pine MSW	-	1.3%	-0.6%	-2.4%	-1.9%	-4.2%	-1.6%
<b>White Pine Total</b>	-	<b>5.3%</b>	<b>-5.6%</b>	<b>-5.8%</b>	<b>4.6%</b>	<b>3.0%</b>	<b>0.3%</b>
NNRDA Industrial	-	1.9%	-8.5%	-7.7%	99.0%	-44.9%	8.0%
NNRDA MSW	-	-1.7%	-12.5%	0.5%	11.1%	-0.4%	-0.6%
<b>NNRDA Total</b>	-	<b>0.7%</b>	<b>-9.9%</b>	<b>-5.0%</b>	<b>68.3%</b>	<b>-34.6%</b>	<b>3.9%</b>

Source: Nevada Division of Environmental Protection, Bureau of Waste Management

Despite year-to-year fluctuation in the annual growth rate in the total amount of industrial waste and municipal solid waste combined entering landfills located throughout the five-county Northeastern Nevada area, the total amount of industrial waste and municipal waste entering

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landfills in Northeastern Nevada increased at an average annual rate of 3.9 percent per year between 2013 and 2018. The amount of just industrial waste entering landfills located throughout the five-county Northeastern Nevada area increased at an average annual rate of 8.0 percent per year and the amount of just municipal solid waste entering landfills located throughout the five-county Northeastern Nevada area decreased at an average annual rate of -0.6 percent per year. Each of the five counties within the Northeastern Nevada area exhibited a somewhat similar pattern as average annual rates of growth in the total amount of waste entering county-level landfills were largely driven by a positive average annual rate of growth in the amount of industrial waste entering area landfills with generally moderate or negative average annual rates of growth in the amount of municipal solid waste entering area landfills.

In Humboldt County, the total amount of industrial waste and municipal waste entering landfills operating within Humboldt County increased at an average annual rate of just 1.0 percent between 2013 and 2018. Unlike the larger five-county Northeastern Nevada area, the total amount of just industrial waste entering landfills operating within Humboldt County increased only slightly by an average annual rate of just 0.3 percent between 2013 and 2018 while the amount of just municipal solid waste entering landfills operating within Humboldt County increased at average annual rate of 6.2 percent per year between 2013 and 2018.

Unlike the larger five-county Northeastern Nevada area, the total amount of industrial waste and municipal waste entering landfills operating within Elko County decreased at an average annual rate of -0.8 percent per year between 2013 and 2018. The total amount of just industrial waste entering landfills operating within Elko County increased at an average annual rate of 13.7 percent between 2013 and 2018 and the total amount of just municipal solid waste entering landfills operating within Elko County decreased at an average annual rate of -2.6 percent between 2013 and 2018. Although the growth patterns in the average annual growth rate in the amount of industrial waste and municipal solid waste entering landfills operating within Elko County followed similar patterns for the entire five-county Northeastern Nevada area, the dominance of municipal solid waste as a source of total waste entering landfills in Elko County drove the negative average annual growth rate in the amount of total waste entering landfills operating within the county.

In Eureka County, the total amount of industrial waste and municipal waste entering landfills operating within Eureka County increased at an average annual rate of 18.7 percent between 2013 and 2018. Similar to the pattern found for the larger five-county Northeastern Nevada area, the total amount of just industrial waste entering landfills operating within Eureka County increased at an average annual rate of 24.2 percent between 2013 and 2018 while the amount of just municipal solid waste entering landfills operating within Eureka County decreased by an average annual rate of -7.5 percent between 2013 and 2018.

In Lander County, the total amount of industrial waste and municipal waste entering landfills operating within Lander County increased at an average annual rate of 58.7 percent between 2013 and 2018. Similar to the pattern observed for the larger five-county Northeastern Nevada area, the total amount of just industrial waste entering landfills operating within Lander County increased at an average annual rate of 64.4 percent between 2013 and 2018. However, unlike the pattern observed for the larger five-county Northeastern Nevada area, the total amount of just



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municipal solid waste entering landfills operating within Lander County increased at an average annual rate of 4.2 percent between 2013 and 2018.

Similar to the pattern found in the larger five-county Northeastern Nevada area, the total amount of industrial waste and municipal waste entering landfills operating within White Pine County increased at an average annual rate of 0.3 percent between 2013 and 2018. The total amount of just industrial waste entering landfills operating within White Pine County increased at an average annual rate of 2.6 percent between 2013 and 2018 and the total amount of just municipal solid waste entering landfills operating within White Pine County decreased by an average annual rate of -0.6 percent between 2013 and 2018.

### 2.3.c Discussion Regarding the Relationship Between Recyclable Waste Generated and Waste Collected by Landfills Operating within the Northeastern Nevada Regional Development Authority Area

As previously noted, the amount of municipal solid waste and commercial and industrial waste generated and transferred to community landfills is largely influenced by changes in the levels of economic activity, personal consumption patterns, and population growth. This section has presented an overview of the five-county Northeastern Nevada Regional Development Authority's area socio-demographic, economic, and industry sector and occupational sector characteristics in order to understand the drivers of municipal solid waste and commercial and industrial waste being generated throughout the area. Understanding these characteristics and the various patterns in what types of and how much waste is entering area landfills is the first step in determining the overall feasibility of developing a comprehensive recycling industry sector in Northeastern Nevada.

Generally, continued positive growth in a community's or region's total population, total number of households, median household income levels, median family income levels, per capita income levels, and total civilian workforce combined with decreases in a community's or region's civilian unemployment rate correlates positively with an increase in the amount of total waste produced by that community or region. Improved socio-demographic, economic, and industry sector and occupational sector characteristics lead to increased consumption and increased production and these increases in-turn lead to increases in the amount of waste produced by individuals who live in and firms that operate within that community or region. The specific characteristics of a community's or region's economic base will also significantly impact the quantity of and type of waste produced within that community or region. A community's or region's economic base that is dominated by a single firm or just a few individual firms or industry and occupational sectors will tend to become the largest single-point source(s) of waste. Recycling industry sectors can be established and customized to target the specific types and quantities of waste generated from the dominate firm(s) or industry and occupation sector(s). Ultimately, however, a community or region must generate enough total waste, or enough municipal solid waste and/or commercial and industrial waste, to produce enough potentially recycled materials to justify the creation of that recycling industry.

The various socio-demographic, economic, and industry sector and occupational sector characteristics of the entire Northeastern Nevada Regional Development area over the past

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several years, coupled with the overall growth in the amount of total municipal solid waste and commercial and industrial waste making its way into area landfills, suggests that the five-county Northeastern Nevada area could potentially support the development of a new recycling industry. As previously discussed in this section, the total population of the entire Northeastern Nevada Regional Development Authority area grew by 2,444 total individuals or 2.9 percent between 2013 and 2017 and the total number of households within this five-county area grew by 407 total households or 1.4 percent over the same 2013 to 2017 period. Median household income increased by \$7,443 or 11.8 percent between 2013 and 2017, median family income increased by \$11,594 or 15.1 percent between 2013 and 2017, and per capita income increased by \$3,152 or 11.5 percent between 2013 and 2017 throughout the Northeastern Nevada area. Between 2013 and 2017, the five-county area's total civilian workforce increased by 2,324 total workers or 3.6 percent while the Northeastern Nevada Regional Development Authority area's total civilian unemployment rate decreased by a total of 1.9 percent or -22.8 percent overall between 2013 and 2017.

The positive improvements in these various socio-demographic and economic conditions for the entire Northeastern Nevada Regional Development Authority area suggest that total amounts of potentially recyclable waste materials will continue to increase for the foreseeable future for the entire area. Between 2013 and 2018, the total amount of municipal solid waste and commercial and industrial waste combined and collected by landfills operating throughout the entire five-county Northeastern Nevada area increased at an annual average rate of 3.9 percent per year between 2013 and 2018. However, the actual total amount of municipal waste and commercial and industrial waste combined and collected by landfills operating throughout the entire five-county Northeastern Nevada area decreased from an estimated 256,487.30 metric tonnes of total waste collected in 2013 to 243,132.18 metric tonnes of total waste collected in 2018, a net decrease of 13,335.11 metric tonnes of total waste or -5.2 percent.

In fact, both total commercial and industrial waste and total municipal solid waste levels being collected by area landfills decreased between 2013 and 2018. Combined total commercial and industrial waste levels collected by area landfills within the Northeastern Nevada area decreased from an estimated 167,208.18 metric tonnes of total waste in 2013 to an estimated 157,760.22 metric tonnes of total waste in 2018, a net decrease of 9,447.97 metric tonnes or -5.7 percent. Total municipal solid waste levels collected by area landfills within the Northeastern Nevada area decreased from an estimated 89,279.11 metric tonnes of total waste in 2013 to an estimated 85,371.97 metric tonnes of total waste in 2018, a net decrease of 3,907.15 metric tonnes or -4.4 percent.

The apparent inconsistency in the behavior of the annual average growth rate in total municipal solid waste and total commercial and industrial waste, in total municipal solid waste alone, and in total commercial and industrial waste alone and in the behavior of the actual total amounts of waste generated area-wide is likely due to significant variation in the annual average levels of growth in the total amounts of waste being collected by landfills located throughout the Northeastern Nevada area. For example, between 2013 and 2014, the total amount of municipal solid waste and commercial and industrial waste combined and collected by area landfills grew by 0.7 percent but declined by -9.9 percent between 2014 and 2015 and then by -5.0 percent between 2015 and 2016. The total amount of municipal solid waste and commercial and

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industrial waste combined and collected by area landfills then grew substantially, by 68.3 percent, between 2016 and 2017 and then declined substantially, by -34.6 percent, between 2017 and 2018.

The individual year-by-year annual average growth rates of just total commercial and industry waste and just total municipal solid waste collected by area-wide landfills within the Northeastern Nevada area show a similar inconsistent pattern of growth and decline. Between 2013 and 2014, the total amount of just commercial and industrial waste collected by area landfills increased by 1.9 percent and then decreased by -8.5 percent between 2014 and 2015 and then by -7.7 percent between 2015 and 2016. The annual average growth rate in the total amount of commercial and industrial waste collected by area-wide landfills increased dramatically between 2016 and 2017, increasing by 99.0 percent, followed by a significant decline of -44.9 percent between 2017 and 2018. Between 2013 and 2014, the total amount of just municipal solid waste collected by area landfills decreased by 1.7 percent followed by a more significant decrease of -12.5 percent between 2014 and 2015. The annual average growth rate in the total amount of just municipal solid waste collected by area-wide landfills within the five-county Northeastern Nevada area increased slightly by 0.5 percent between 2015 and 2016 followed by a significant increase of 11.1 percent between 2016 and 2017 and then followed by a slight decrease of -0.4 percent between 2017 and 2018.

A successful recycling industry sector for the five-county Northeastern Nevada area will depend upon a steady and reliable source of potential recyclable materials as a key input into production. Future growth of any future recycling industry sector will further depend on a growing source of potential recyclable materials from both within and potentially from outside the five-county area. The past six years of available landfill receiving data for landfills operating within the five-county Northeastern Nevada area suggests that a reliable source and future growing source of potential recyclable materials is not available at this time despite continued growth and improvement in the region's various underlying socio-demographic and economic conditions. However, it may be possible to build a new recycling industry for the five-county Northeastern Nevada area on commercial and industrial waste sources and from identifiable single point sources of waste materials. Between 2013 and 2018, as previously mentioned, total commercial and industrial waste materials collected by area-wide landfills within the Northeastern Nevada area grew at an annual average rate of 8.0 percent per year while total municipal waste materials collected by area-wide landfills decreased by -0.6 per year. Over this same six-year period, commercial and industrial waste accounted for, on average, 67.5 percent of all waste collected on an annual basis by area landfills while municipal solid waste accounted for, on average, 32.5 percent of all waste collected on an annual basis by area landfills.

The economic dominance of the Mining, Quarrying, and Oil and Gas Extraction industry sector within the Northeastern Nevada Regional Development Authority area, generating 11,498 total jobs in 2018 alone with a location quotient of 61.97 and generating approximately \$3.86 billion in total annual economic output in 2018, suggests that firms within this industry sector are the primary single point source of commercial and industrial waste materials within the five-county area. A new recycling industry sector in Northeastern Nevada could potentially benefit from being able to tailor their, at least, initial and start-up processes to serve this primary industry sector by focusing on efforts to recycle potential recyclable materials being generated by firms

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operating within the Mining, Quarrying, and Oil and Gas Extraction industry sector. Furthermore, the current condition of the Administrative and Support and Waste Management and Remediation Services industry sector, generating 949 total jobs in 2018 alone with a location quotient of 0.34 and generating approximately \$57.62 million in total annual economic output in 2018, suggests that there is room for economic growth within the Northeastern Nevada Regional Development Authority area for the Administrative and Support and Waste Management and Remediation Services industry sector.

The next step in determining the overall feasibility of developing a comprehensive recycling industry sector in Northeastern Nevada involves assessing the change in prices for recycled waste materials within regional and national recycled waste material markets. The results of the analysis for this next step is presented in the next section of this University Center for Economic Development technical report.

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## 3.0 Price Model of Recycled Materials Generated in Northeastern Nevada

Prevailing and predicted prices for recycled materials is a critical element in determining the overall market and technical feasibility for establishing a new recycling industry in Northeastern Nevada. If prices are too low, individual recycling firms will be unable to generate sufficient revenue to support commercial activity. If prices are too high, individual firms may lose market share to firms producing non-recycled substitute products. This section presents regional (defined as states located within the Southwestern United States) and national (including all of the United States and parts of Canada) pricing data for various recycled materials. The selection of recycled materials included in the following price models was made using the list of potentially recyclable waste generated by current mining operations located in Northeastern Nevada and listed in Table 2.11 in Section 2.0 of this University Center for Economic Development technical report.

### 3.1 Methodology in Developing Price Models of Recyclable Commodities

All historical pricing data was obtained from public sources available from [www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com) and the prices for individual recyclable materials were sorted into three primary categories including: (1) plastics, (2) metals, and (3) paper. Price data for individual recyclable materials for each of these three primary categories were then analyzed and estimated. Polyethylene Terephthalate (PET) Baled, Natural High Density Polyethylene (HDPE), and Colored High Density Polyethylene (HDPE) were examined individually for the plastics category. Aluminum Cans Sorted, Aluminum Cans Loose, Steel Cans Sorted Baled, Steel Cans Sorted Densified, Steel Cans Loose, and White Goods Loose were examined individually for the metals category. Mixed Paper, Sorted Residential, Corrugated Containers, and Office Paper were examined individually for the paper category. A total of 13 separate finished recyclable commodities were examined in the development of a larger price model for recyclable commodities that could potentially be developed from waste generated in Northeastern Nevada.

Noticeably absent from these three primary categories are recyclable commodities produced from various types of glass and recyclable commodities produced from various types of rubber. In general, pricing data for recyclable glass and rubber at a regional or national level was unavailable given the high variability in local prices or the general lack of data that is collected on these types of recyclable commodities. Upon interviews with representatives from the Nevada Division of Environmental Protection and the University of Nevada, Reno's Business Environmental Program, it was decided to forgo any estimation of historical, current, or predicted future prices for recycled glass and rubber commodities due to the high degree of error or missing market price data for these two potential recyclable commodities. While reliable price data was unavailable, the potential recycling of glass and rubber in a Northeastern Nevada

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recycling industry is addressed to some degree in Section 4.0 and Section 5.0 of this University Center for Economic Development technical report.

Both regional and national prices for the 13 selected recyclable commodities were examined and considered. The regional average prices presented in this section refer to the Southwestern United States, defined as Region 9 by the U.S. Environmental Protection Agency. U.S. Environmental Protection Agency Region 9 includes the states of Arizona, California, Hawaii, and Nevada. The national average prices presented in this section include all ten U.S. Environmental Protection Agency regions which includes all 50 states plus America Samoa, the District of Columbia, the Northern Mariana Islands, Puerto Rico, the Trust Territories, and the U.S. Virgin Islands. The national average prices presented in this section also include parts of Canada including the provinces of Ontario and Quebec.

Determining a suitable time period for the analysis presented in this section was difficult as the available price data was collected and published on a weekly basis in some cases and on a day-to-day basis. Because of this inconsistency, a specific time period (i.e. price per week or price per day) was not specified. While this inconsistency does not invalidate the long-term trend analysis presented in this section, it is important to note that price fluctuations in recyclable commodities tend to vary daily and weekly and this fluctuation could potentially impact day-to-day operations of firms producing recyclable materials from generated waste. Whenever possible, the time period of August 26, 2016 to January 10, 2020 was used in the analysis presented in this section. If price data for specific recyclable commodities were not available from August 26, 2016, the earliest available date for the specific recyclable commodity was used as the starting part in the analysis.

## **3.2 Historical and Current Prices for Recycled Plastics**

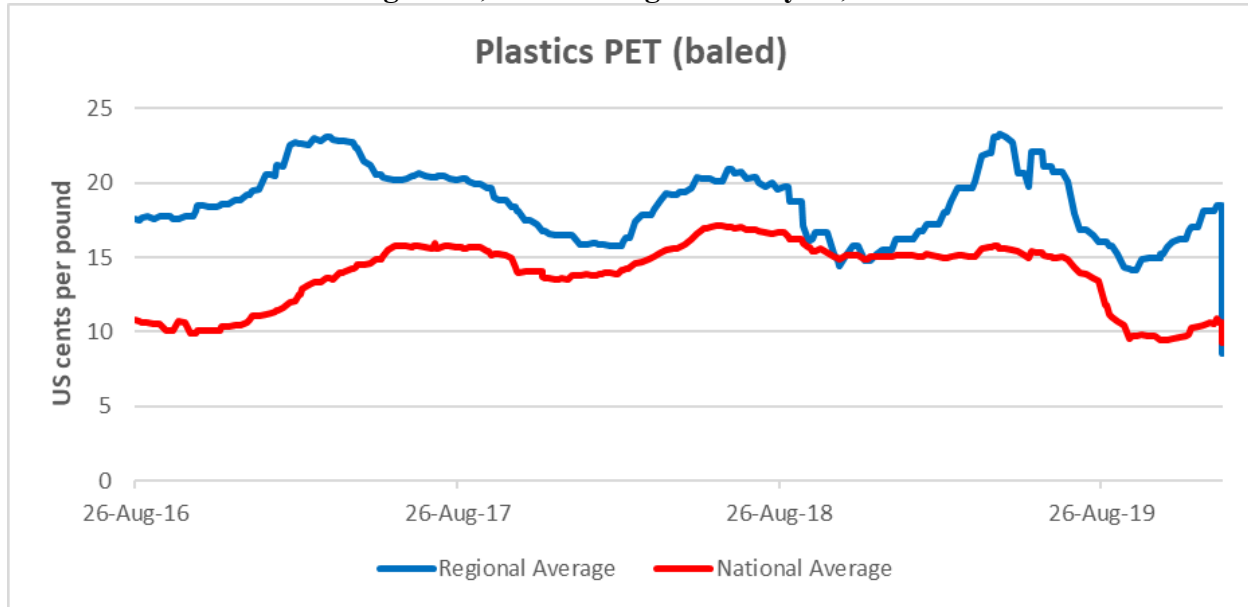
For the plastics primary recycling commodity category, the commodities of Polyethylene Terephthalate (PET) Baled, Natural High Density Polyethylene (HDPE), and Colored High Density Polyethylene (HDPE) were examined and the resulting price models are presented in this sub-section.

### **3.2.a Polyethylene Terephthalate (PET) Baled Plastics**

Figure 3.1 presents both the regional and national modeled analysis and changes in prices for PET Baled plastics. The results are presented in U.S. cents per pound.

Since August 26, 2016, the average regional price of PET Baled plastics has decreased from an estimated \$0.1757 per pound to an estimated \$0.0850 per pound, a net decrease of \$0.0907 per pound or -51.6 percent. The average regional price per pound over this nearly three and a half year period was \$0.1859 per pound (with a reported standard deviation of \$0.0245 per pound). Over the same time period, the average national price of PET Baled plastics has decreased from an estimated \$0.1082 per pound to an estimated \$0.0928 per pound, a net decrease of \$0.0154 per pound or -14.2 percent. The average national price per pound over this nearly three and a half year period was \$0.1381 per pound (with a reported standard deviation of \$0.0240).

**Figure 3.1 – Regional and National Average Historical Prices of PET Baled Plastics  
August 26, 2016 through January 10, 2020**



Source: *Regional and National Price Data, PET Baled Plastics*,  
[www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Table 3.1 presents the estimated summary statistics for regional and national prices for PET Baled plastics for the trend lines presented in Figure 3.1.

<b>Table 3.1 – Summary Descriptive Statistics PET Baled Plastics, Regional and National Price Data August 26, 2016 through January 10, 2020</b>						
Variable	No. of Observations	Average	Standard Deviation	Coefficient of Variation	Minimum	Maximum
Regional Average	258	18.59	2.45	13.17%	8.5	23.25
National Average	258	13.81	2.24	16.23%	9.28	17.11

Source: *Regional and National Price Data, PET Baled Plastics*,  
[www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Using the resulting summary descriptive statistics presented in Table 3.1, two separate regression models, one for the regional average price of PET Baled plastics and one for the national average price of PET Baled plastics, were developed. In both Equation 1 and Equation 2, price is regressed on time. Equation 1 predicts the regional average price of PET Baled plastics and Equation 2 predicts the national average price of PET Baled plastics. As Equation 1 demonstrates, the predicted regional price of PET Baled plastics will decrease by an estimated \$0.0001 per pound for each subsequent time period and, as Equation 2 demonstrates, the

predicted national price of PET Baled plastics will decrease by an estimated \$0.0003 per pound for each subsequent time period.

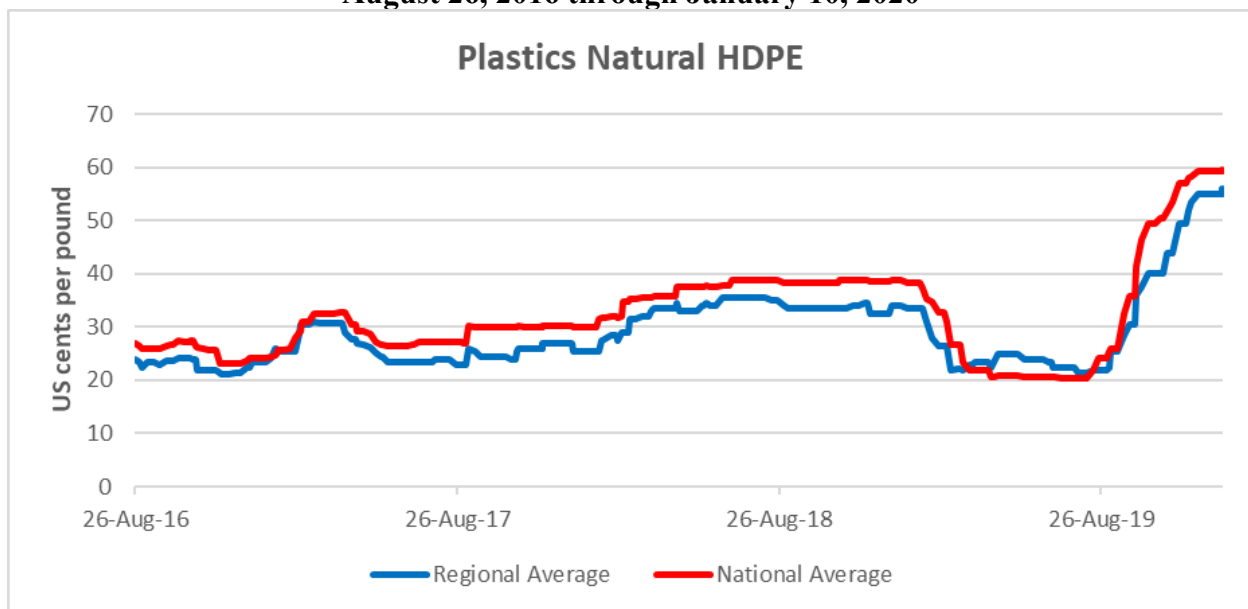
$$(1) \text{ Regional Average Price of Plastics PET (baled)} = 19.99 - 0.01\text{time}, R^2 = 0.105 \\ (0.289)^{***1} (0.002)^{***}$$

$$(2) \text{ National Average Price of Plastics PET (baled)} = 13.44 + 0.003\text{time}, R^2 = 0.005 \\ (0.279)^{***} (0.002)$$

### 3.2.b Natural High Density Polyethylene (HDPE) Plastics

Figure 3.2 presents both the regional and national modeled analysis and changes in prices for Natural HDPE plastics. The results are presented in U.S. cents per pound.

**Figure 3.2 – Regional and National Average Historical Prices of Natural HDPE Plastics August 26, 2016 through January 10, 2020**



Source: Regional and National Price Data, Natural HDPE Plastics, [www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Since August 26, 2016, the average regional price of Natural HDPE plastics has increased from an estimated \$0.2400 per pound to an estimated \$0.5600 per pound, a net increase of \$0.3200 per pound or 133.3 percent. The average regional price per pound over this nearly three and a half year period was \$0.2913 per pound (with a reported standard deviation of \$0.0737 per pound). Over the same period, the average national price of Natural HDPE plastics has also increased,

<sup>1</sup> No\* = p-value > 0.10

\* = 0.05 < p-value < 0.10

\*\* = 0.01 < p-value < 0.05

\*\*\* = p-value < 0.01



increasing from an estimated \$0.2694 per pound to an estimated \$0.5947 per pound, a net increase of \$0.3253 per pound or 120.8 percent. The average national price per pound over this nearly three and a half year period was \$0.3210 per pound (with a reported standard deviation of \$0.0897).

Table 3.2 presents the estimated summary statistics for regional and national prices for Natural HDPE plastics for the trend lines presented in Figure 3.2.

<b>Table 3.2 – Summary Descriptive Statistics</b> <b>Natural HDPE Plastics, Regional and National Price Data</b> <b>August 26, 2016 through January 10, 2020</b>						
<b>Variable</b>	<b>No. of Observations</b>	<b>Average</b>	<b>Standard Deviation</b>	<b>Coefficient of Variation</b>	<b>Minimum</b>	<b>Maximum</b>
Regional Average	258	29.13	7.37	25.29%	21	56
National Average	258	32.10	8.97	27.95%	20.34	59.47

Source: *Regional and National Price Data, Natural HDPE Plastics*,  
[www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Using the resulting summary descriptive statistics presented in Table 3.2, two separate regression models, one for the regional average price of Natural HDPE plastics and one for the national average price of Natural HDPE plastics, were developed. In both Equation 3 and Equation 4, price is regressed on time. Equation 3 predicts the regional average price of PET Baled plastics and Equation 4 predicts the national average price of Natural HDPE plastics. As Equation 3 demonstrates, the predicted regional price of Natural HDPE plastics will increase by an estimated \$0.0005 per pound for each subsequent time period and, as Equation 4 demonstrates, the predicted national price of Natural HDPE plastics will increase by an estimated \$0.0005 per pound for each subsequent time period.

$$(3) \text{ Regional Average Price of Plastics Natural HDPE} = 22.92 + 0.05\text{time}, R^2 = 0.236 \\ (0.81)^{***} (0.01)^{***}$$

$$(4) \text{ National Average Price of Plastics Natural HDPE} = 25.73 + 0.05\text{time}, R^2 = 0.168 \\ (1.02)^{***} (0.01)^{***}$$

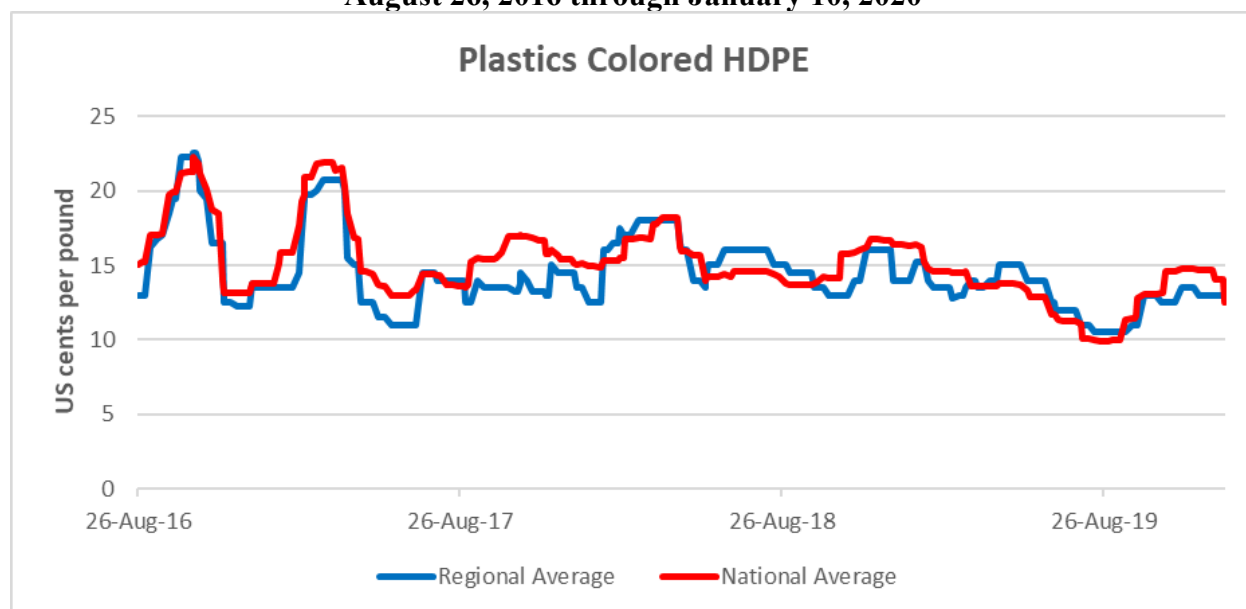
### 3.2.c Colored High Density Polyethylene (HDPE) Plastics

Figure 3.3 presents both the regional and national modeled analysis and changes in prices for Colored HDPE plastics. The results are presented in U.S. cents per pound.

The average regional price of HDPE Plastics remained unchanged with an estimated \$0.1300 per pound on August 26, 2016 and with an estimated \$0.1300 per pound on January 10, 2020. The average regional price per pound over this nearly three and a half year period was \$0.1448 per pound (with a reported standard deviation of \$0.0253). Between August 16, 2016 and January

10, 2020, the average national price of HDPE Plastics decreased from an estimated \$0.1500 per pound to an estimated \$0.1253, a net decrease of \$0.0247 per pound or -16.5 percent. The average national price per pound over this nearly three and a half year period was \$0.1506 (with a reported standard deviation of \$0.0252).

**Figure 3.3 – Regional and National Average Historical Prices of Colored HDPE Plastics August 26, 2016 through January 10, 2020**



Source: *Regional and National Price Data, Colored HDPE Plastics*, [www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Table 3.3 presents the estimated summary statistics for regional and national prices for Colored HDPE plastics for the trend lines presented in Figure 3.3.

<b>Table 3.3 – Summary Descriptive Statistics Colored HDPE Plastics, Regional and National Price Data August 26, 2016 through January 10, 2020</b>						
Variable	No. of Observations	Average	Standard Deviation	Coefficient of Variation	Minimum	Maximum
Regional Average	258	14.48	2.53	17.46%	10.5	22.5
National Average	258	15.06	2.52	16.76%	9.92	22.31

Source: *Regional and National Price Data, Colored HDPE Plastics*, [www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Using the resulting summary descriptive statistics presented in Table 3.3, two separate regression models, one for the regional average price of Colored HDPE plastics and one for the national average price of Colored HDPE plastics, were developed. In both Equation 5 and Equation 6, price is regressed on time.

---

$$(5) \text{ Regional Average Price of Plastics Colored HDPE} = 16.36 - 0.01time$$

(0.29)\*\*\* (0.002)\*\*\*

$$(6) \text{ National Average Price of Plastics Colored HDPE} = 17.55 - 0.02time$$

(0.26)\*\*\* (0.002)\*\*\*

Equation 5 predicts the regional average price of Colored HDPE plastics and Equation 6 predicts the national average price of Colored HDPE plastics. As Equation 5 demonstrates, the predicted regional price of Colored HDPE plastics will decrease by an estimated \$0.0001 per pound for each subsequent time period and, as Equation 6 demonstrates, the predicted national price of Colored HDPE plastics will decrease by an estimated \$0.0002 per pound for each subsequent time period.

### 3.3 Historical and Current Prices for Recycled Metals

For the metals primary recycling commodity category, the commodities of Aluminum Cans Sorted, Aluminum Cans Loose, Steel Cans Sorted Baled, Steel Cans Sorted Densified, Steel Cans Loose, and White Goods Loose were examined and the resulting price models are presented in this sub-section.

#### 3.3.a Aluminum Cans Sorted

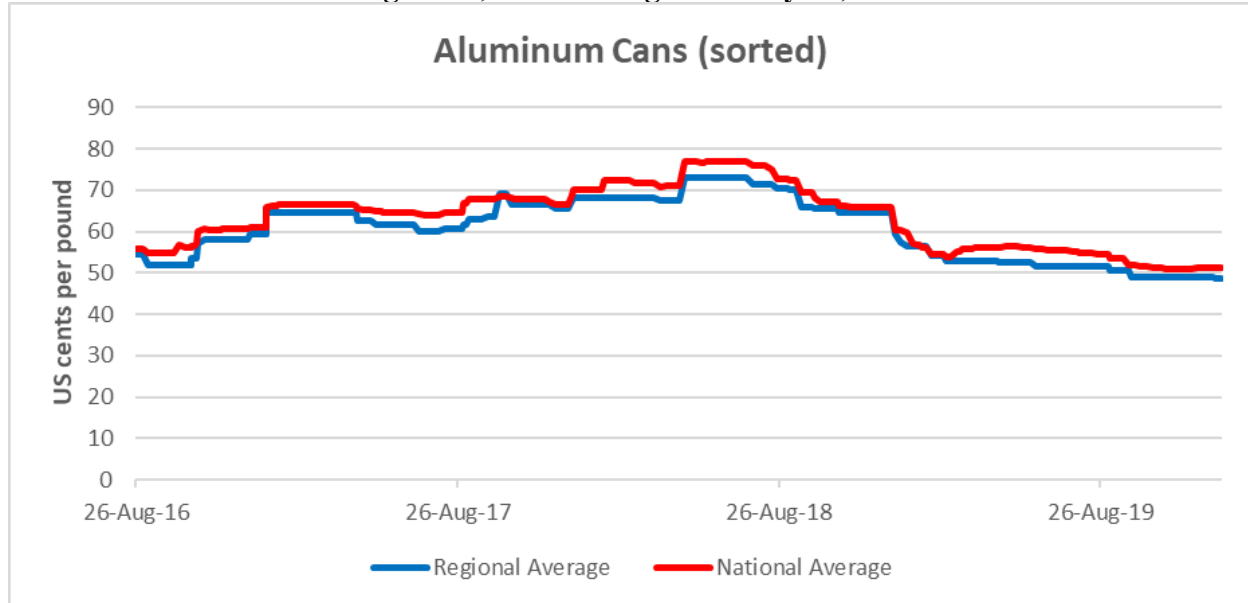
Figure 3.4 presents both the regional and national modeled analysis and changes in prices for Aluminum Cans Sorted for the period between August 26, 2016 and January 10, 2020. The results are presented in U.S. cents per pound.

Between August 26, 2016 and January 10, 2020, the average regional price of Aluminum Cans Sorted has decreased from an estimated \$0.6041 per pound on August 26, 2016 to an estimated \$0.5450 per pound on January 10, 2020, a net decrease of \$0.0591 per pound or -9.8 percent. The average regional price per pound for Aluminum Cans Sorted over this nearly three and a half year period was \$0.6041 per pound (with a reported standard deviation of \$0.0745 per pound).

Over the same August 26, 2016 to January 10, 2020 time period, the average national price of Aluminum Cans Sorted has decreased from \$0.5581 per pound on August 26, 2016 to \$0.5119 per pound on January 10, 2020, a net decrease of \$0.0462 per pound or -8.3 percent. The average national price per pound for Aluminum Cans Sorted over this nearly three and a half year period was \$0.6314 per pound (with a reported standard deviation of \$0.0758).

Following Figure 3.4, Table 3.4 presents the estimated summary statistics, including the estimated total number of observations, the average, the standard deviation, the coefficient of variation, and the minimum and maximum for regional and national prices of Aluminum Cans Sorted for the trend lines presented in Figure 3.4.

**Figure 3.4 – Regional and National Average Historical Prices of Aluminum Cans Sorted  
August 26, 2016 through January 10, 2020**



Source: *Regional and National Price Data, Aluminum Cans Sorted*,  
[www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Table 3.4 – Summary Descriptive Statistics Aluminum Cans Sorted, Regional and National Price Data August 26, 2016 through January 10, 2020						
Variable	No. of Observations	Average	Standard Deviation	Coefficient of Variation	Minimum	Maximum
Regional Average	258	60.41	7.45	12.33%	48.5	73
National Average	258	63.14	7.58	12.00%	51.06	76.81

Source: *Regional and National Price Data, Aluminum Cans Sorted*,  
[www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Using the resulting summary descriptive statistics presented in Table 3.4, two separate regression models, one for the regional average price of Aluminum Cans Sorted and one for the national average price of Aluminum Cans Sorted, were developed.

$$(7) \text{ Regional Average Price of Aluminum Cans (Sorted)} = 65.72 - 0.04time \\ (0.85)^{***} (0.01)^{***}$$

$$(8) \text{ National Average Price of Aluminum Cans (Sorted)} = 68.38 - 0.04time \\ (0.87)^{***} (0.01)^{***}$$

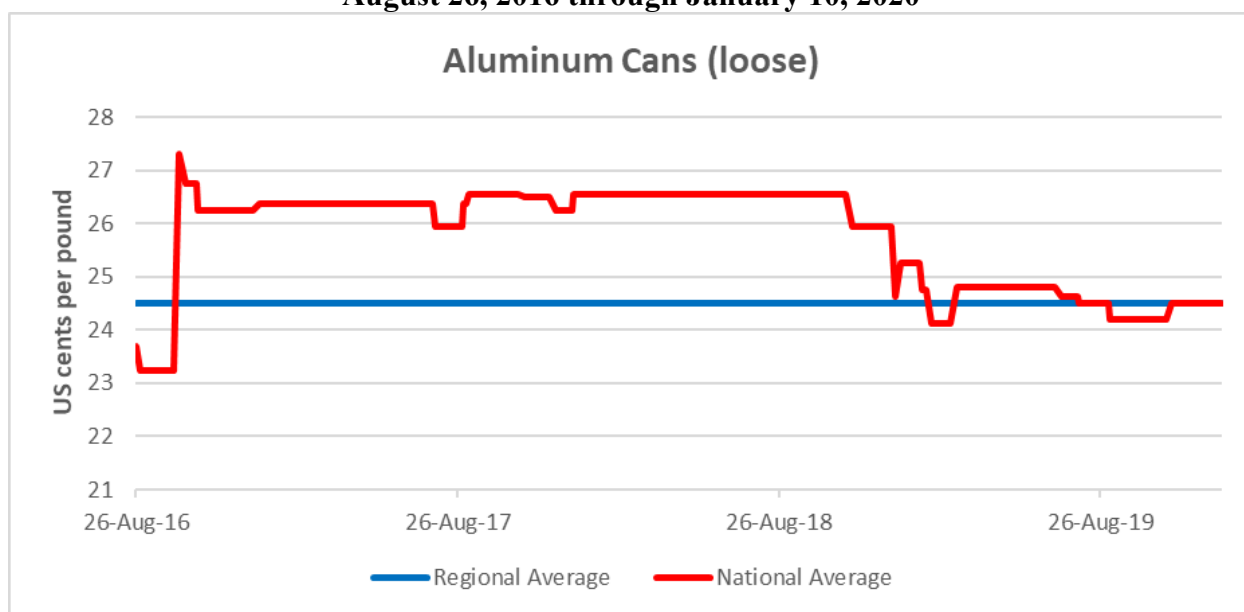
In both Equation 7 and Equation 8, price is regressed on time. Equation 7 predicts the regional average price of Aluminum Cans Sorted and Equation 8 predicts the national average price of

Aluminum Cans Sorted. As Equation 7 demonstrates, the predicted regional price of Aluminum Cans Sorted will decrease by an estimated \$0.0004 per pound for each subsequent time period and, as Equation 8 demonstrates, the predicted national price of Aluminum Cans Sorted will decrease by an estimated \$0.0004 per pound for each subsequent time period.

### 3.3.b Aluminum Cans Loose

Figure 3.5 presents both the regional and national modeled analysis and changes in prices for Aluminum Cans Loose for the period between August 26, 2016 and January 10, 2020. The results are presented in U.S. cents per pound.

**Figure 3.5 – Regional and National Average Historical Prices of Aluminum Cans Loose  
August 26, 2016 through January 10, 2020**



Source: *Regional and National Price Data, Aluminum Cans Loose*,  
[www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Between August 26, 2016 and January 10, 2020, the average regional price of Aluminum Cans Loose remained unchanged with an estimated average price of \$0.2450 per pound on August 26, 2016 and with an estimated average price of \$0.2450 per pound on January 10, 2020. The average regional price per pound for Aluminum Cans Loose over this nearly three and a half year period was \$0.2450 per pound (with a reported standard deviation of \$0.0000). Over the same August 26, 2016 to January 10, 2020 time period, the average national price of Aluminum Cans Loose has increased from an estimated \$0.2369 per pound on August 26, 2016 to an estimated \$0.2450 per pound on January 10, 2020, a net increase of \$0.0081 per pound or 3.4 percent. The average national price per pound for Aluminum Cans Loose over this nearly three and a half year period was \$0.2574 per pound (with a reported standard deviation of \$0.0100).

Table 3.5 presents the estimated summary statistics for regional and national prices for Aluminum Cans Loose for the trend lines presented in Figure 3.5.

<b>Table 3.5 – Summary Descriptive Statistics Aluminum Cans Loose, Regional and National Price Data August 26, 2016 through January 10, 2020</b>						
<b>Variable</b>	<b>No. of Observations</b>	<b>Average</b>	<b>Standard Deviation</b>	<b>Coefficient of Variation</b>	<b>Minimum</b>	<b>Maximum</b>
Regional Average	258	24.50	0.00	0.00%	24.5	24.5
National Average	258	25.74	1.00	3.88%	23.25	27.31

Source: *Regional and National Price Data, Aluminum Cans Loose*,  
[www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Using the resulting summary descriptive statistics presented in Table 3.5, two separate regression models, one for the regional average price of Aluminum Cans Loose and one for the national average price of Aluminum Cans Loose, were developed.

$$(9) \text{ Regional Average Price of Aluminum Cans (loose)} = 24.5 + 0 \text{time}$$

$$(10) \text{ National Average Price of Aluminum Cans (loose)} = 26.64 - 0.007 \text{time}$$

(0.11)\*\*\* (0.001)\*\*\*

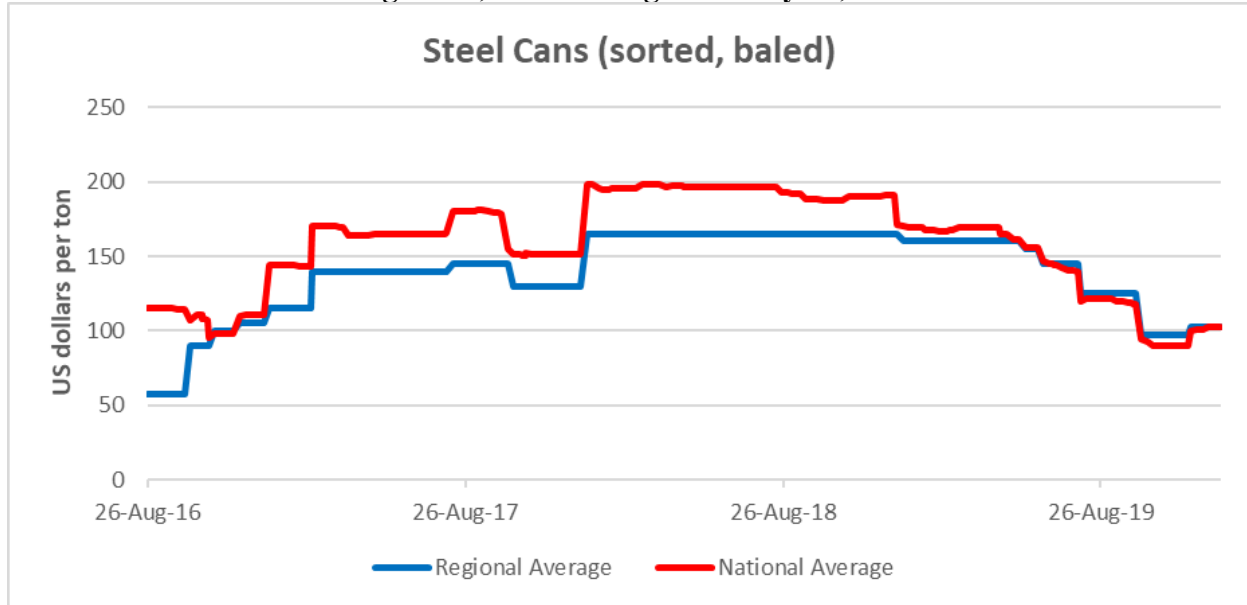
In both Equation 9 and Equation 10, price is regressed on time. Equation 9 predicts the regional average price of Aluminum Cans Loose and Equation 10 predicts the national average price of Aluminum Cans Loose. As Equation 9 demonstrates, the predicted regional price of Aluminum Cans Loose will remain unchanged in each subsequent time period and, as Equation 10 demonstrates, the predicted national price of Aluminum Cans Loose will decrease by an estimated \$0.0007 per pound for each subsequent time period.

### 3.3.c Steel Cans Sorted Baled

Figure 3.6 presents both the regional and national modeled analysis and changes in prices for Steel Cans Sorted Baled for the period between August 26, 2016 and January 10, 2020. The results are presented in U.S. dollars per ton.

Between August 26, 2016 and January 10, 2020, the average regional price of Steel Cans Sorted Baled increased from an estimated \$57.50 per ton to an estimated \$102.50 per ton, an increase of approximately \$45.00 or 78.3 percent. The average regional price per ton for Steel Cans Sorted Baled over this nearly three and a half year period was \$138.36 per ton (with a reported standard deviation of \$27.88). Over the same August 26, 2016 to January 10, 2020 time period, the average national price of Steel Cans Sorted Baled has decreased from an estimated \$115.63 per ton on August 26, 2016 to an estimated \$102.81 per ton on January 10, 2020, a net decrease of \$12.82 per ton or -11.1 percent. The average national price per ton for Steel Cans Sorted Baled over this nearly three and a half year period was \$157.29 per ton (with a reported standard deviation of \$33.13).

**Figure 3.6 – Regional and National Average Historical Prices of Steel Cans Sorted Baled  
August 26, 2016 through January 10, 2020**



Source: Regional and National Price Data, Steel Cans Sorted Baled,  
[www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Table 3.6 presents the estimated summary statistics for regional and national prices for Steel Cans Sorted Baled for the trend lines presented in Figure 3.6.

<b>Table 3.6 – Summary Descriptive Statistics Steel Cans Sorted Baled, Regional and National Price Data August 26, 2016 through January 10, 2020</b>						
Variable	No. of Observations	Average	Standard Deviation	Coefficient of Variation	Minimum	Maximum
Regional Average	258	138.36	27.88	20.15%	57.5	165
National Average	258	157.29	33.13	21.06%	90.31	198.44

Source: Regional and National Price Data, Steel Cans Sorted Baled,  
[www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Using the resulting summary descriptive statistics presented in Table 3.6, two separate regression models, one for the regional average price of Steel Cans Sorted Baled and one for the national average price of Steel Cans Sorted Baled, were developed.

$$(11) \text{ Regional Average Price of Steel Cans ( baled) } = 123.49 + 0.11\text{time}, R^2 = 0.095 \\ (3.319)^{***} (0.022)^{***}$$

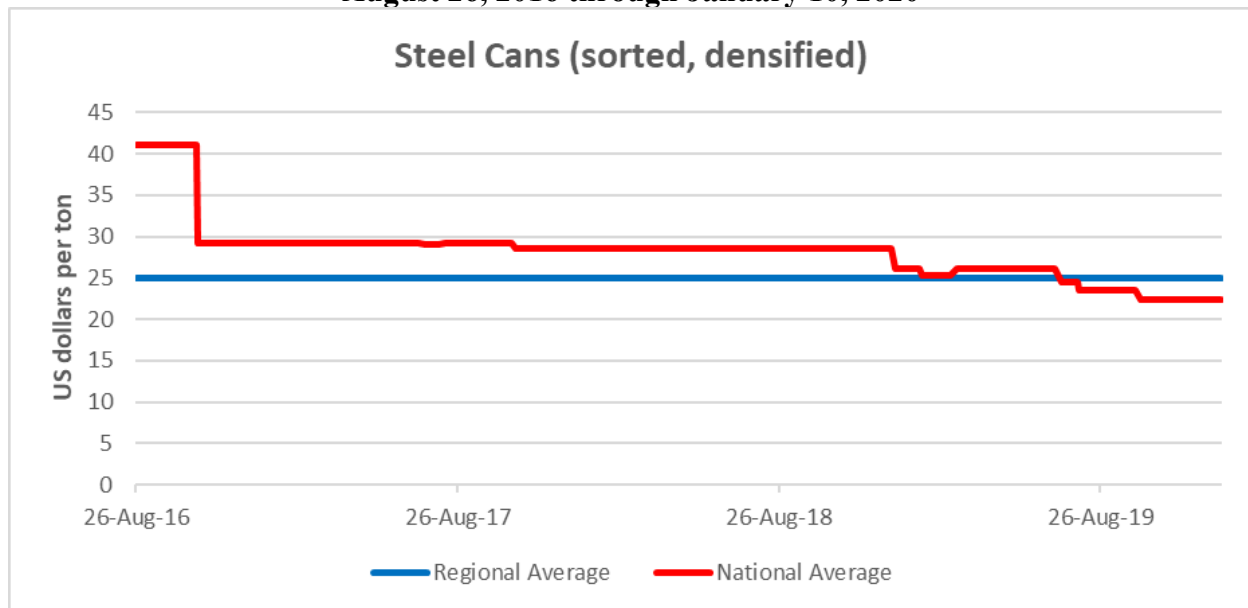
$$(12) \text{ National Average Price of Steel Cans ( baled) } = 159.9 - 0.02\text{time}, R^2 = 0.002 \\ (4.141)^{***} (0.028)$$

In both Equation 11 and Equation 12, price is regressed on time. Equation 11 predicts the regional average price of Steel Cans Sorted Baled and Equation 12 predicts the national average price of Steel Cans Sorted Baled. As Equation 11 demonstrates, the predicted regional price of Steel Cans Sorted Baled will increase by an estimated \$0.11 per ton in each subsequent time period and, as Equation 12 demonstrates, the predicted national price of Steel Cans Sorted Baled will decrease by an estimated \$0.02 per ton for each subsequent time period.

### 3.3.d Steel Cans Sorted Densified

Figure 3.7 presents both the regional and national modeled analysis and changes in prices for Steel Cans Sorted Densified for the period between August 26, 2016 and January 10, 2020. The results are presented in U.S. dollars per ton.

**Figure 3.7 – Regional and National Average Historical Prices of Steel Cans Sorted Densified  
August 26, 2016 through January 10, 2020**



Source: *Regional and National Price Data, Steel Cans Sorted Densified*,  
[www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Between August 26, 2016 and January 10, 2020, the average regional price of Steel Cans Sorted Densified remained unchanged with an average regional price of \$25.00 per ton on both August 26, 2016 and on January 10, 2020. The average regional price per ton for Steel Cans Sorted Densified over this nearly three and a half year period was \$25.00 per ton (with a reported standard deviation of \$0.00). Over the same August 26, 2016 to January 10, 2020 time period, the average national price of Steel Cans Sorted Densified has decreased from an estimated \$41.00 per ton on August 26, 2016 to an estimated \$22.33 per ton on January 10, 2020, a net decrease of \$18.67 per ton or -45.5 percent. The average national price per ton for Steel Cans



Sorted Densified over this nearly three and a half year period was \$28.19 per ton (with a reported standard deviation of \$3.86).

Table 3.7 presents the estimated summary statistics for regional and national prices of Steel Cans Sorted Densified for the trend lines presented in Figure 3.7.

<b>Table 3.7 – Summary Descriptive Statistics</b> <b>Steel Cans Sorted Densified, Regional and National Price Data</b> <b>August 26, 2016 through January 10, 2020</b>						
<b>Variable</b>	<b>No. of Observations</b>	<b>Average</b>	<b>Standard Deviation</b>	<b>Coefficient of Variation</b>	<b>Minimum</b>	<b>Maximum</b>
Regional Average	258	138.36	27.88	20.15%	57.5	165
National Average	258	157.29	33.13	21.06%	90.31	198.44

Source: *Regional and National Price Data, Steel Cans Sorted Densified*,  
[www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Using the resulting summary descriptive statistics presented in Table 3.7, two separate regression models, one for the regional average price of Steel Cans Sorted Densified and one for the national average price of Steel Cans Sorted Densified, were developed.

$$(13) \text{ Regional Average Price of Steel Cans (densified)} = 25 + 0time, R^2 = 1$$

(0)      (0)

$$(14) \text{ National Average Price of Steel Cans (densified)} = 33.4 - 0.04time, R^2 = 0.605$$

(0.303)\*\*\* (0.002)\*\*\*

In both Equation 13 and Equation 14, price is regressed on time. Equation 13 predicts the regional average price of Steel Cans Sorted Densified and Equation 14 predicts the national average price of Steel Cans Sorted Densified. As Equation 13 demonstrates, the predicted regional price of Steel Cans Sorted Densified will remain unchanged in each subsequent time period and, as Equation 14 demonstrates, the predicted national price of Steel Cans Sorted Densified will decrease by an estimated \$0.04 per ton for each subsequent time period.

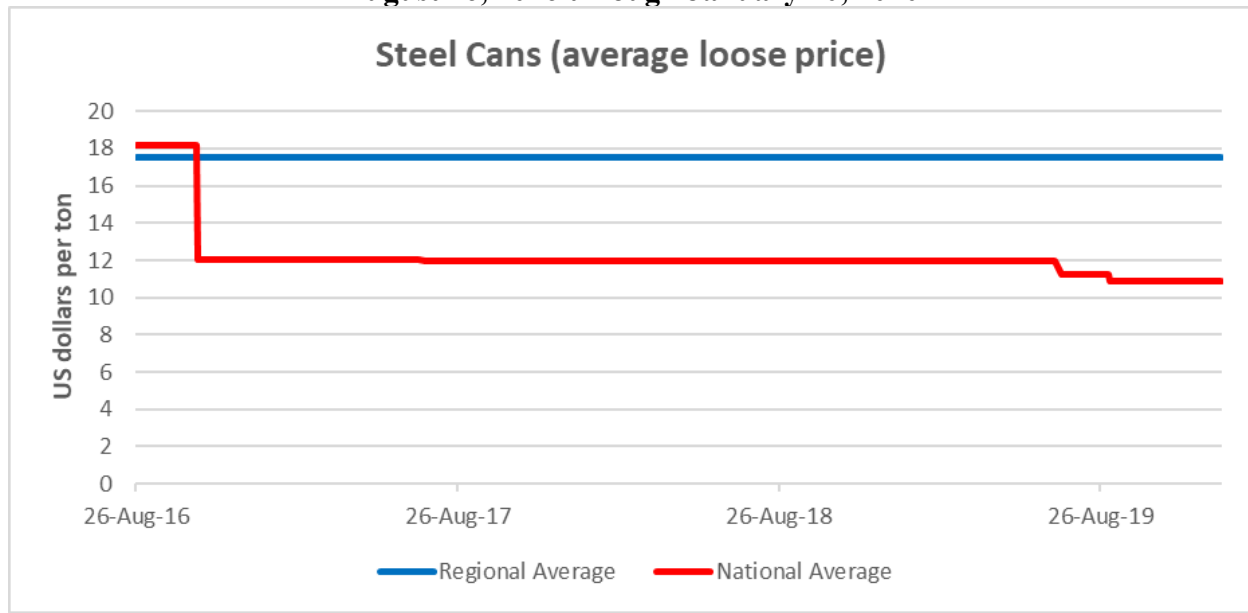
### 3.3.e Steel Cans Loose

Figure 3.8 presents both the regional and national modeled analysis and changes in prices for Steel Cans Loose for the period between August 26, 2016 and January 10, 2020. The results are presented in U.S. dollars per ton.

Between August 26, 2016 and January 10, 2020, the average regional price of Steel Cans Loose remained unchanged with an average regional price of \$17.50 per ton on August 26, 2016 and with an average regional price of \$17.50 per ton on January 10, 2020. The average regional price per ton for Steel Cans Loose over this nearly three and a half year period was \$17.50 per ton (with a reported standard deviation of \$0.00). Over the same August 26, 2016 to January 10, 2020 time period, the average national price of Steel Cans Loose has decreased from an

estimated \$18.21 per ton on August 26, 2016 to an estimated \$10.86 per ton on January 10, 2020, a net decrease of \$7.35 per ton or -40.4 percent. The average national price per pound for Steel Cans Loose over this nearly three and a half year period was \$12.16 per ton (with a reported standard deviation of \$1.55).

**Figure 3.8 – Regional and National Average Historical Prices of Steel Cans Loose  
August 26, 2016 through January 10, 2020**



Source: *Regional and National Price Data, Steel Cans Loose*,  
[www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Table 3.8 presents the estimated summary statistics for regional and national prices of Steel Cans Sorted Densified for the trend lines presented in Figure 3.8.

<b>Table 3.8 – Summary Descriptive Statistics Steel Cans Loose, Regional and National Price Data August 26, 2016 through January 10, 2020</b>						
Variable	No. of Observations	Average	Standard Deviation	Coefficient of Variation	Minimum	Maximum
Regional Average	258	17.50	0.00	0.00%	17.5	17.5
National Average	258	12.16	1.55	12.73%	10.86	18.21

Source: *Regional and National Price Data, Steel Cans Loose*,  
[www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Using the resulting summary descriptive statistics presented in Table 3.8, two separate regression models, one for the regional average price of Steel Cans Loose and one for the national average price of Steel Cans Loose, were developed.

$$(15) \text{ Regional Average Price of Steel Cans (loose)} = 17.5 + 0time, R^2 = 1$$

(0)      (0)

$$(16) \text{ National Average Price of Steel Cans (loose)} = 13.61 - 0.01time, R^2 = 0.289$$

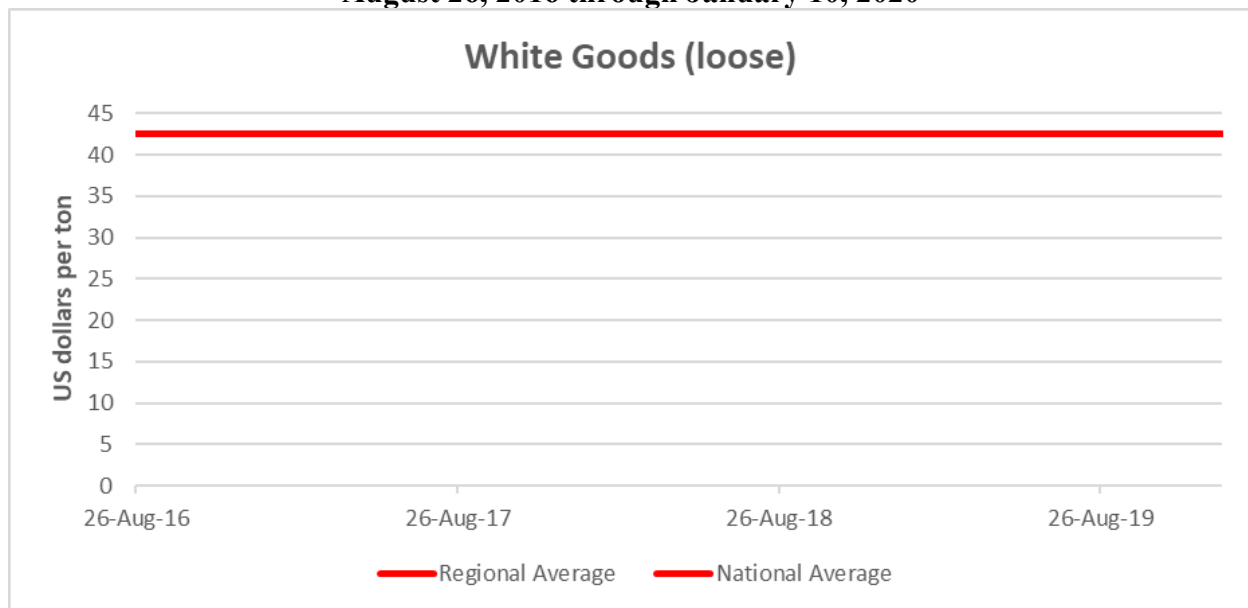
(0.163)\*\*\* (0.001)\*\*\*

In both Equation 15 and Equation 16, price is regressed on time. Equation 15 predicts the regional average price of Steel Cans Loose and Equation 16 predicts the national average price of Steel Cans Loose. As Equation 15 demonstrates, the predicted regional price of Steel Cans Loose will remain unchanged in each subsequent time period and, as Equation 16 demonstrates, the predicted national price of Steel Cans Loose will decrease by an estimated \$0.01 per ton for each subsequent time period.

### 3.3.f White Goods Loose

Figure 3.9 presents both the regional and national modeled analysis and changes in prices for White Goods Loose, typically comprising discarded appliances, for the period between August 26, 2016 and January 10, 2020. The results are presented in U.S. dollars per ton. Note that the pricing data and subsequent analysis for both regional and national prices for White Goods Loose were identical.

**Figure 3.9 – Regional and National Average Historical Prices of White Goods Loose  
August 26, 2016 through January 10, 2020**



Source: *Regional and National Price Data, White Goods Loose*,  
[www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Between August 26, 2016 and January 10, 2020, the average regional price of White Good Loose remained unchanged with an average regional price of \$42.50 per ton on both August 26, 2016 and on January 10, 2020. The average regional price per ton for White Goods Loose over this

nearly three and a half year period was also \$42.50 per ton (with a reported standard deviation of \$0.00). Over the same August 26, 2016 to January 10, 2020 time period, the average national price of White Goods Loose remained unchanged with an average national price of \$42.50 per ton. The average national price per pound for White Goods Loose over this nearly three and a half year period was also \$42.50 per ton (with a reported standard deviation of \$0.00).

Table 3.9 presents the estimated summary statistics for regional and national prices Steel Cans Sorted Densified for the trend lines presented in Figure 3.9.

<b>Table 3.9 – Summary Descriptive Statistics</b> <b>White Goods Loose, Regional and National Price Data</b> <b>August 26, 2016 through January 10, 2020</b>						
<b>Variable</b>	<b>No. of Observations</b>	<b>Average</b>	<b>Standard Deviation</b>	<b>Coefficient of Variation</b>	<b>Minimum</b>	<b>Maximum</b>
Regional Average	258	42.5	0	0.00%	42.5	42.5
National Average	258	42.5	0	0.00%	42.5	42.5

Source: *Regional and National Price Data, White Goods Loose*,  
[www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Using the resulting summary descriptive statistics presented in Table 3.9, two separate but identical regression models, one for the regional average price of White Goods Loose and one for the national average price of White Goods Loose, were developed.

$$(17) \text{ Regional Average Price of White Goods (loose)} = 42.5 + 0time, R^2 = 1$$

(0)      (0)

$$(18) \text{ National Average Price of White Goods (loose)} = 42.5 + 0time, R^2 = 1$$

(0)      (0)

In both Equation 17 and Equation 18, price is regressed on time. Equation 17 predicts the regional average price of White Goods Loose and Equation 18 predicts the national average price of White Goods Loose. As Equation 17 demonstrates, the predicted regional price of White Goods Loose will remain unchanged in each subsequent time period and, as Equation 18 demonstrates, the predicted national price of White Goods Loose will also remain unchanged in each subsequent time period.

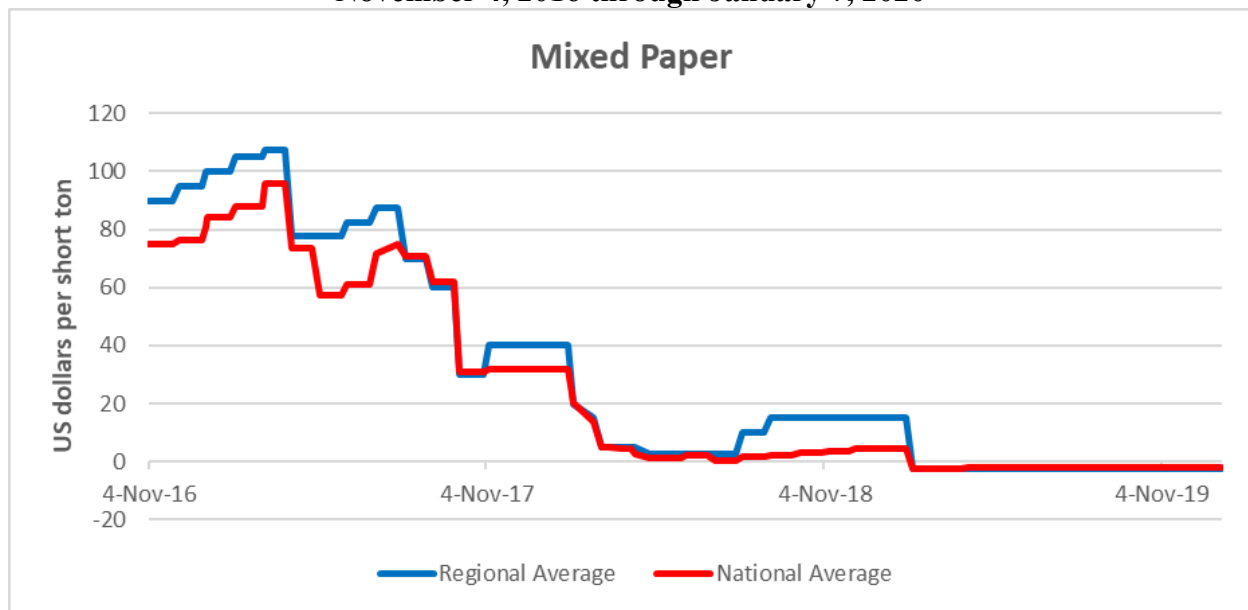
### 3.4 Historical and Current Prices for Recycled Paper

For the metals primary recycling commodity category, the commodities of Mixed Paper, Sorted Residential, Corrugated Containers, and Office Paper were examined and the resulting price models are presented in this sub-section.

### 3.4.a Mixed Paper

Figure 3.10 presents both the regional and national modeled analysis and changes in prices for Mixed Paper for the period between November 4, 2016 and January 7, 2020. The results are presented in U.S. dollars per short ton.

**Figure 3.10 – Regional and National Average Historical Prices of Mixed Paper  
November 4, 2016 through January 7, 2020**



Source: Regional and National Price Data, Mixed Paper, [www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Between November 4, 2016 and January 7, 2020, the average regional price of Mixed Paper decreased from an estimated \$90.00 per short ton on November 4, 2016 to an estimated -\$2.50 per short ton on January 7, 2020, a net decrease of \$92.50 per short ton or -101.0 percent. The average regional price per short ton for Mixed Paper over this nearly three year period was \$31.47 per short ton (with a reported standard deviation of \$33.84).

Over the same November 4, 2016 to January 7, 2020, the average national price of Mixed Paper decreased from an estimated \$75.00 per short ton on November 4, 2016 to an estimated -\$1.88 per short ton on January 7, 2020, a net decrease of \$76.88 per short ton or -102.5 percent. The average national price per short ton for Mixed Paper over this nearly three year period was \$25.77 per short ton (with a reported standard deviation of \$33.84).

Table 3.10 presents the estimated summary statistics, including the estimated total number of observations, the average, the standard deviation, the coefficient of variation, and the minimum and maximum for regional and national prices Mixed Paper for the trend lines presented in Figure 3.10 for Mixed Paper.

<b>Table 3.10 – Summary Descriptive Statistics Mixed Paper, Regional and National Price Data November 4, 2016 through January 7, 2020</b>						
<b>Variable</b>	<b>No. of Observations</b>	<b>Average</b>	<b>Standard Deviation</b>	<b>Coefficient of Variation</b>	<b>Minimum</b>	<b>Maximum</b>
Regional Average	85	31.47	38.72	123.03%	-2.5	107.5
National Average	85	25.77	33.84	131.27%	-2.5	95.94

Source: *Regional and National Price Data, Mixed Paper*, [www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Using the resulting summary descriptive statistics presented in Table 3.10, two separate regression models, one for the regional average price of Mixed Paper and one for the national average price of Mixed Paper, were developed.

$$(19) \text{ Regional Average Price of Mixed Paper} = 91.45 - 1.39\text{time}, R^2 = 0.791 \\ (3.902)^{***} (0.079)^{***}$$

$$(20) \text{ National Average Price of Mixed Paper} = 77.9 - 1.21\text{time}, R^2 = 0.782 \\ (3.482)^{***} (0.07)^{***}$$

In both Equation 19 and Equation 20, price is regressed on time. Equation 19 predicts the regional average price of Mixed Paper and Equation 20 predicts the national average price of Mixed Paper. As Equation 19 demonstrates, the predicted regional price of Mixed Paper will decrease by an estimated \$1.39 per short ton for each subsequent time period and, as Equation 20 demonstrates, the predicted national price of Mixed Paper will decrease by an estimated \$1.21 per short ton for each subsequent time period.

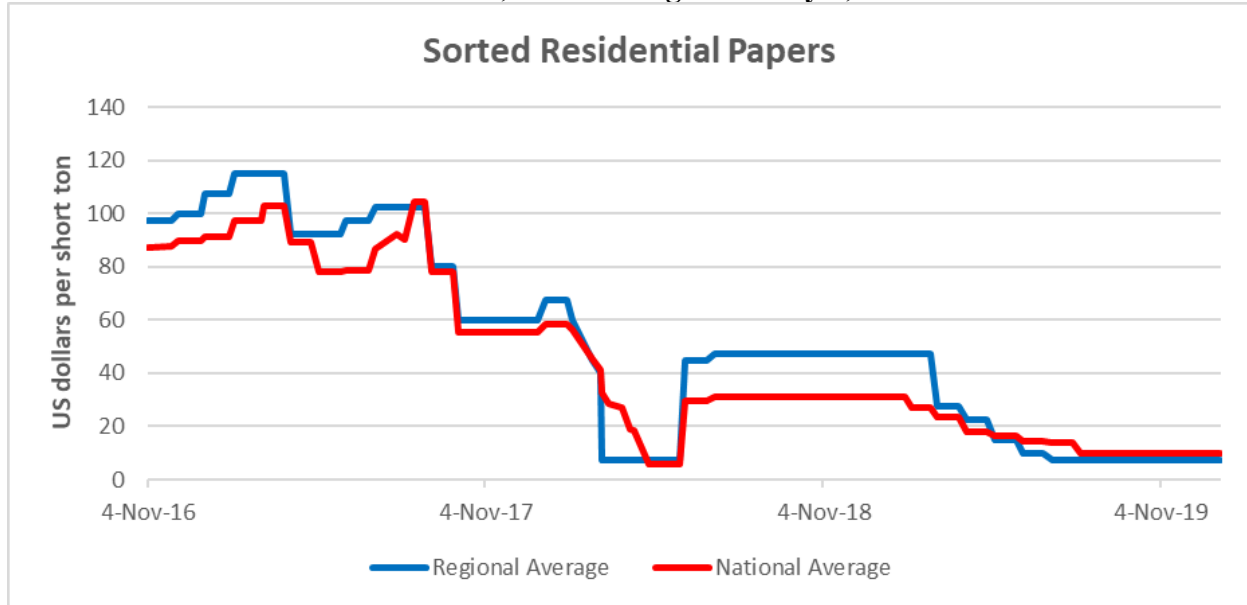
### 3.4.b Sorted Residential Paper

Figure 3.11 presents both the regional and national modeled analysis and changes in prices for Sorted Residential Paper for the period between November 4, 2016 and January 7, 2020. The results are presented in U.S. dollars per short ton.

Between November 4, 2016 and January 7, 2020, the average regional price of Sorted Residential Paper decreased from an estimated \$97.50 per short ton on November 4, 2016 to an estimated \$7.50 per short ton on January 7, 2020, a net decrease of \$90.00 per short ton or -92.3 percent. The average regional price per short ton for Sorted Residential Paper over this nearly three year period was \$51.09 per short ton (with a reported standard deviation of \$37.65).

Over the same nearly three year period, the average national price of Sorted Residential Paper decreased from an estimated \$87.19 per short ton on November 4, 2016 to an estimated \$10.00 per short ton on January 7, 2020, a net decrease of \$77.19 per short ton or -88.5 percent. The average national price per short ton for Sorted Residential Paper over this nearly three year period was \$45.11 per short ton (with a reported standard deviation of \$32.46).

**Figure 3.11 – Regional and National Average Historical Prices of Sorted Residential Paper  
November 4, 2016 through January 7, 2020**



Source: *Regional and National Price Data, Sorted Residential Paper*,  
[www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Table 3.11 presents the estimated summary statistics, including the estimated total number of observations, the average, the standard deviation, the coefficient of variation, and the minimum and maximum for regional and national prices Sorted Residential Paper for the trend lines presented in Figure 3.11.

Variable	No. of Observations	Average	Standard Deviation	Coefficient of Variation	Minimum	Maximum
Regional Average	85	51.09	37.65	73.70%	7.5	115
National Average	85	45.11	32.46	71.95%	5.94	104.38

Source: *Regional and National Price Data, Sorted Residential Paper*,  
[www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Using the resulting summary descriptive statistics presented in Table 3.11, two separate regression models, one for the regional average price of Sorted Residential Paper and one for the national average price of Sorted Residential Paper, were developed.

$$(21) \text{ Regional Average Price of Sorted Residential Paper} = 107.82 - 1.32\text{time}, \\ R^2 = 0.748 \\ (4.162)^{***} (0.084)^{***}$$

$$(22) \text{ National Average Price of Sorted Residential Paper} = 96.1 - 1.19\text{time},$$

$$R^2 = 0.813$$

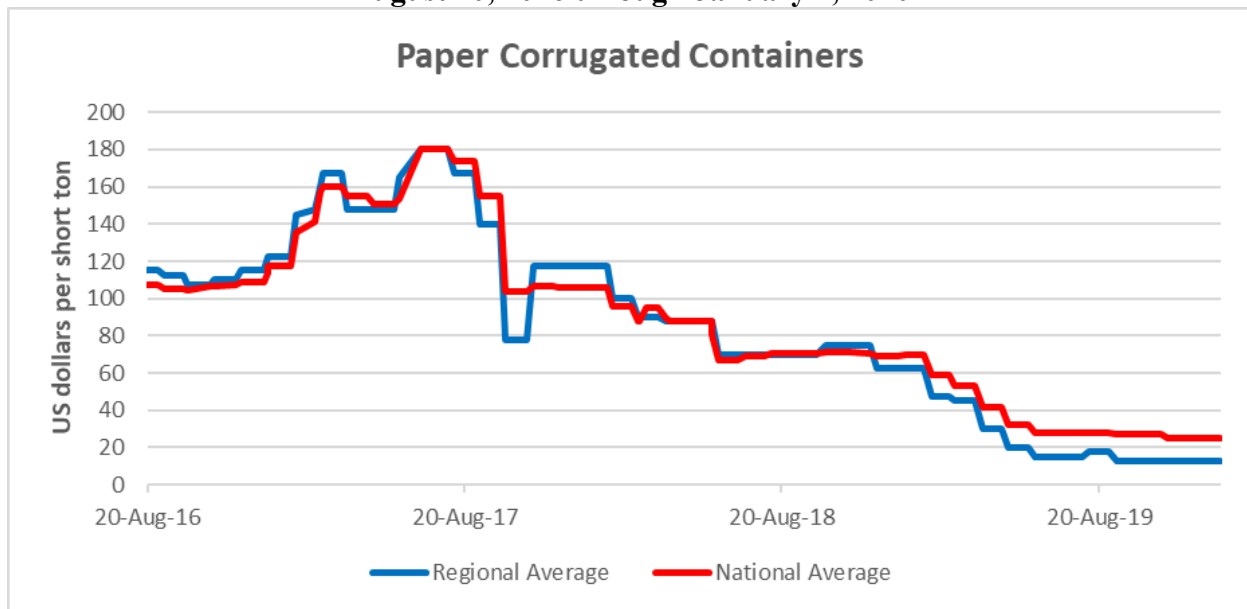
$$(3.091)^{***} (0.062)^{***}$$

In both Equation 21 and Equation 22, price is regressed on time. Equation 21 predicts the regional average price of Sorted Residential Paper and Equation 22 predicts the national average price of Sorted Residential Paper. As Equation 21 demonstrates, the predicted regional price of Sorted Residential Paper will decrease by an estimated \$1.32 per short ton for each subsequent time period and, as Equation 22 demonstrates, the predicted national price of Sorted Residential Paper will decrease by an estimated \$1.19 per sorted ton for each subsequent time period.

### 3.4.c Paper Corrugated Containers

Figure 3.12 presents both the regional and national modeled analysis and changes in prices for Paper Corrugated Containers for the period between August 20, 2016 and January 7, 2020. The results are presented in U.S. dollars per short ton.

**Figure 3.12 – Regional and National Average Historical Prices of Paper Corrugated Containers**  
August 20, 2016 through January 7, 2020



Source: *Regional and National Price Data, Paper Corrugated Containers*,  
[www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Between August 20, 2016 and January 7, 2020, the average regional price of Paper Corrugated Containers decreased from \$115.00 per short ton on August 20, 2016 to \$12.50 per short ton on January 7, 2020, a net decrease of \$102.50 per short ton or -89.1 percent. The average regional price per short ton for Paper Corrugated Containers over this nearly three and a half year period was \$86.95 per short ton (with a reported standard deviation of \$50.18).



Over the same nearly three and a half year period, the average national price of Paper Corrugated Containers decreased from an estimated \$107.19 per short ton on August 20, 2016 to an estimated \$25.00 per short ton on January 7, 2020, a net decrease of \$82.19 per short ton or -76.7 percent. The average national price per short ton for Paper Corrugated Containers over this nearly three and a half year period was \$89.45 per short ton (with a reported standard deviation of \$45.60).

Table 3.12 presents the estimated summary statistics, including the estimated total number of observations, the average, the standard deviation, the coefficient of variation, and the minimum and maximum for regional and national prices for Paper Corrugated Containers for the trend lines presented in Figure 3.12.

<b>Table 3.12 – Summary Descriptive Statistics</b> <b>Paper Corrugated Containers, Regional and National Price Data</b> <b>August 20, 2016 through January 7, 2020</b>						
<b>Variable</b>	<b>No. of Observations</b>	<b>Average</b>	<b>Standard Deviation</b>	<b>Coefficient of Variation</b>	<b>Minimum</b>	<b>Maximum</b>
Regional Average	91	86.95	50.18	57.71%	12.5	180
National Average	91	89.45	45.60	50.98%	24.69	180

Source: *Regional and National Price Data, Paper Corrugated Containers*,  
[www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Using the resulting summary descriptive statistics presented in Table 3.12, two separate regression models, one for the regional average price of Paper Corrugated Containers and one for the national average price of Paper Corrugated Containers, were developed.

$$(23) \text{ Regional Average Price of Paper Corrugated Containers} = 163.43 - 1.66time, \\ R^2 = 0.766 \quad (5.162)^{***} (0.097)^{***}$$

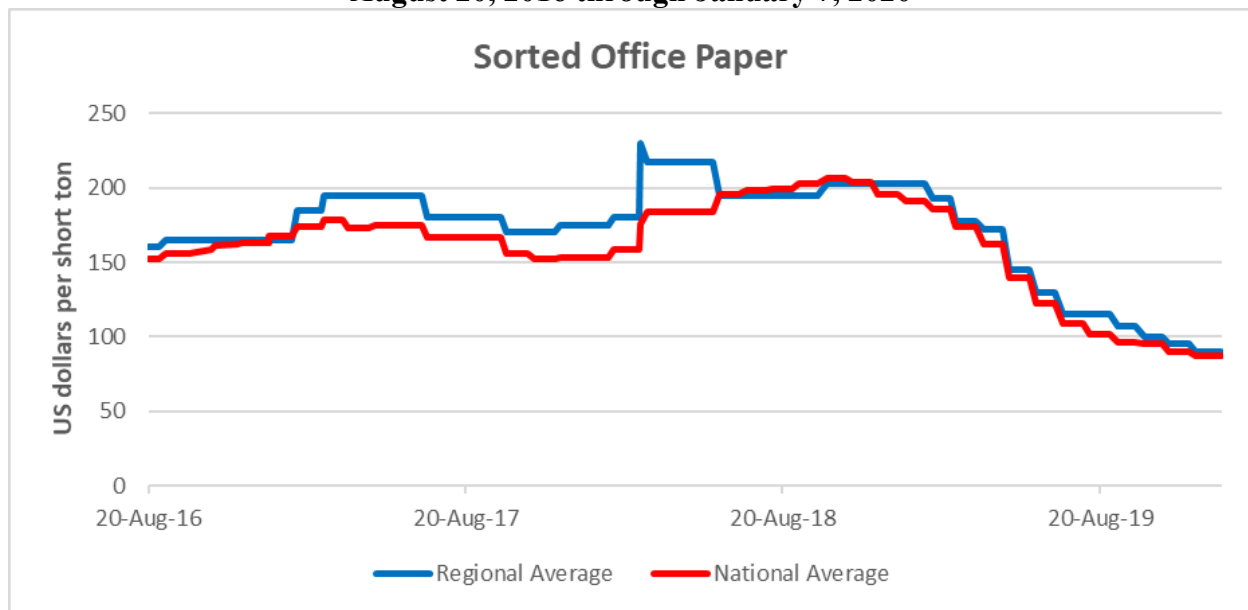
$$(24) \text{ National Average Price of Paper Corrugated Containers} = 156.57 - 1.46time, \\ R^2 = 0.715 \quad (5.179)^{***} (0.098)^{***}$$

In both Equation 23 and Equation 24, price is regressed on time. Equation 23 predicts the regional average price of Paper Corrugated Containers and Equation 24 predicts the national average price of Paper Corrugated Containers. As Equation 23 demonstrates, the predicted regional price of Paper Corrugated Containers will decrease by an estimated \$1.66 per short ton for each subsequent time period and, as Equation 24 demonstrates, the predicted national price of Paper Corrugated Containers will decrease by an estimated \$1.46 per sorted ton for each subsequent time period.

### 3.4.d Sorted Office Paper

Figure 3.13 presents both the regional and national modeled analysis and changes in prices for Sorted Office Paper for the period between August 20, 2016 and January 7, 2020. The results are presented in U.S. dollars per short ton.

**Figure 3.13 – Regional and National Average Historical Prices of Sorted Office Paper  
August 20, 2016 through January 7, 2020**



Source: *Regional and National Price Data, Sorted Office Paper*,  
[www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Between August 20, 2016 and January 7, 2020, the average regional price of Sorted Office Paper decreased from an estimated \$160.00 per short ton on August 20, 2016 to an estimated \$90.00 per short ton on January 7, 2020, a net decrease of \$70.00 per short ton or -43.8 percent. The average regional price per short ton for Sorted Office Paper over this nearly three and a half year period was \$171.87 per short ton (with a reported standard deviation of \$33.02).

Over the same nearly three and a half year period, the average national price of Sorted Office Paper decreased from an estimated \$152.19 per short ton on August 20, 2016 to an estimated \$86.88 per short ton on January 7, 2020, a net decrease of \$65.31 per short ton or -42.9 percent. The average national price per short ton for Sorted Office Paper over this nearly three and a half year period was \$160.41 per short ton (with a reported standard deviation of \$33.02).

Table 3.13 presents the estimated summary statistics, including the estimated total number of observations, the average, the standard deviation, the coefficient of variation, and the minimum and maximum for regional and national prices for Sorted Office Paper for the trend lines presented in Figure 3.13.

<b>Table 3.13 – Summary Descriptive Statistics Sorted Office Paper, Regional and National Price Data August 20, 2016 through January 7, 2020</b>						
<b>Variable</b>	<b>No. of Observations</b>	<b>Average</b>	<b>Standard Deviation</b>	<b>Coefficient of Variation</b>	<b>Minimum</b>	<b>Maximum</b>
Regional Average	91	86.95	50.18	57.71%	12.5	180
National Average	91	89.45	45.60	50.98%	24.69	180

Source: *Regional and National Price Data, Sorted Office Paper*,  
[www.secondarypricingmaterials.com](http://www.secondarypricingmaterials.com)

Using the resulting summary descriptive statistics presented in Table 3.13, two separate regression models, one for the regional average price of Sorted Office Paper and one for the national average price of Sorted Office Paper, were developed.

$$(25) \text{ Regional Average Price of Sorted Office Paper} = 199.65 - 0.60\text{time}, R^2 = 0.201 \\ (6.77)^{***} (0.128)^{***}$$

$$(26) \text{ National Average Price of Sorted Office Paper} = 184.3 - 0.52\text{time}, R^2 = 0.173 \\ (6.385)^{***} (0.121)^{***}$$

In both Equation 25 and Equation 26, price is regressed on time. Equation 25 predicts the regional average price of Sorted Office Paper and Equation 26 predicts the national average price of Sorted Office Paper. As Equation 25 demonstrates, the predicted regional price of Sorted Office Paper will decrease by an estimated \$0.60 per short ton for each subsequent time period and, as Equation 26 demonstrates, the predicted national price of Sorted Office Paper will decrease by an estimated \$0.52 per sorted ton for each subsequent time period.

### 3.5 Historical and Predicated Future Prices for Recycled Plastics, Metals, and Paper Summarized

A summary of the 13 separate finished recycled commodities for each of the three primary categories, plastics, metals, and paper, is presented in this sub-section.

#### 3.5.a Historical and Predicted Future Prices for Recycled Plastics

Table 3.14 presents a general summary for the historical regional and national average prices and for the predicted regional and national average future prices for the three commodities of recycled plastics, including Polyethylene Terephthalate (PET) Baled, Natural High Density Polyethylene (HDPE), and Colored High Density Polyethylene (HDPE). The estimated historical actual change, the estimated historical percentage change, and the predicted increase or decrease in regional and national prices based upon the completed regression estimates for each

individual recycled plastic commodities are presented. Those individual recycled plastic commodities with predicated future increases are highlighted.

<b>Table 3.14 – Recycled Plastics Summarized Historical and Predicted Future Prices</b>			
<b>Commodity</b>	<b>Historical Actual Change</b>	<b>Historical Percentage Change</b>	<b>Predicated Future Actual Change</b>
<b>PET Baled</b>			
Regional	-\$0.0907 per pound	-51.6%	-\$0.0001 per pound
National	-\$0.0154 per pound	-14.2%	-\$0.0003 per pound
<b>Natural HDPE</b>			
Regional	\$0.3200 per pound	133.3%	\$0.0005 per pound
National	\$0.3253 per pound	120.8%	\$0.0005 per pound
<b>Colored HDPE</b>			
Regional	\$0.0000 per pound	0.0%	-\$0.0001 per pound
National	-\$0.0247	-16.5%	-\$0.0002 per pound

Of the three separate recycled plastics commodities analyzed, only the average regional price for Natural HDPE plastics and the average national price for Natural HDPE plastics is predicted to increase, with the average regional price and the average national price of Natural HDPE plastics increasing only slightly by just \$0.0005 per pound. The average regional price and the average national price for PET Baled plastics are predicted to decline, by \$0.0001 per pound and \$0.0003 per pound respectively. The average regional price and the average national price for Colored HDPE plastics are also predicted to decline, by \$0.0001 per pound and by \$0.0002 per pound respectively. Based on just the historical changes and the predicated future change in regional and national prices, there does not appear to be enough appreciable growth in the recycled plastics regional and national markets to support a recycling industry in Northeastern Nevada at the time of publication of this University Center for Economic Development technical report.

### 3.5.b Historical and Predicted Future Prices for Recycled Metals

Table 3.15 presents a general summary for the historical regional and national average prices and for the predicted regional and national average future prices for the six commodities of recycled metals, including Aluminum Cans Sorted, Aluminum Cans Loose, Steel Cans Sorted Baled, Steel Cans Sorted Densified, Steel Cans Loose, and White Goods Loose. The estimated historical actual change, the estimated historical percentage change, and the predicted increase or decrease in regional and national prices based upon the completed regression estimates for each individual recycled metal commodities are presented. Those individual recycled metal commodities with predicated future increases are highlighted.

<b>Table 3.15 – Recycled Metals Summarized Historical and Predicted Future Prices</b>			
<b>Commodity</b>	<b>Historical Actual Change</b>	<b>Historical Percentage Change</b>	<b>Predicated Future Actual Change</b>
<b>Aluminum Cans Sorted</b>			
Regional	-\$0.0591 per pound	-9.8%	-\$0.0004 per pound
National	-\$0.0462 per pound	-8.3%	-\$0.0004 per pound
<b>Aluminum Cans Loose</b>			
Regional	\$0.00 per pound	0.0%	\$0.00 per pound
National	\$0.0081 per pound	3.4%	-\$0.0007 per pound
<b>Steel Cans Sorted Baled</b>			
Regional	\$45.00 per ton	78.3%	\$0.11 per ton
National	-\$12.82 per ton	-11.1%	-\$0.02 per ton
<b>Steel Cans Sorted Densified</b>			
Regional	\$0.00 per ton	0.0%	\$0.00 per ton
National	-\$18.67 per ton	-45.5%	-\$0.04 per ton
<b>Steel Cans Loose</b>			
Regional	\$0.00 per ton	0.0%	\$0.00 per ton
National	-\$7.35 per ton	-40.4%	-\$0.01 per ton
<b>White Goods Loose</b>			
Regional	\$0.00 per ton	0.0%	\$0.00 per ton
National	\$0.00 per ton	0.0%	\$0.00 per ton

Of the six separate recycled metal commodities analyzed, only the average regional price for Steel Cans Sorted Baled is predicted to increase, with the average regional price for Steel Cans Sorted Baled expected to increase slightly by \$0.11 per ton. However, the average national price for Steel Cans Sorted Baled is predicted to decrease, decreasing by an anticipated \$0.02 per ton. Comparatively, the average regional and average national prices for Aluminum Cans Sorted are predicted to decline, each by an estimated \$0.0004 per pound. The estimated average regional price for Aluminum Cans Loose is expected to remain unchanged and the estimated average national price for Aluminum Cans Loose is expected to decline slightly by \$0.0007 per pound. The estimated regional average price for Steel Cans Sorted Densified is expected to remain unchanged and the estimated national average price for Steel Cans Sorted Densified is expected to decline by an estimated \$0.04 per ton. The estimated regional price for Steel Cans Loose is

expected to remain unchanged and the estimated national average price for Steel Cans Loose is expected to decline by an estimated \$0.01 per ton. The estimated regional average price and the estimated national average price for White Goods Loose are both expected to remain unchanged. Based on just the historical changes and the predicated future change in regional and national prices, there does not appear to be enough appreciable growth in the recycled metals regional and national markets to support a recycling industry in Northeastern Nevada at the time of publication of this University Center for Economic Development technical report.

### 3.5.c Historical and Predicted Future Prices for Recycled Paper

Table 3.16 presents a general summary for the historical regional and national average prices and for the predicted regional and national average future prices for the four commodities of recycled paper, including Mixed Paper, Sorted Residential, Corrugated Containers, and Office Paper. The estimated historical actual change, the estimated historical percentage change, and the predicted increase or decrease in regional and national prices based upon the completed regression estimates for each individual recycled paper commodity are presented. Those individual recycled metal commodities with predicated future increases are highlighted.

<b>Table 3.16 – Recycled Paper Summarized Historical and Predicted Future Prices</b>			
<b>Commodity</b>	<b>Historical Actual Change</b>	<b>Historical Percentage Change</b>	<b>Predicated Future Actual Change</b>
<b>Mixed Paper</b>			
Regional	-\$92.50 per ton	-101.0%	-\$1.39 per ton
National	-\$76.88 per ton	-102.5%	-\$1.21 per ton
<b>Sorted Residential Paper</b>			
Regional	-\$90.00 per short ton	-92.3%	-\$1.32 per short ton
National	-\$77.19 per short ton	-88.5%	-\$1.19 per short ton
<b>Paper Corrugated Containers</b>			
Regional	-\$102.50 per short ton	-89.1%	-\$1.66 per short ton
National	-\$82.19 per short ton	-76.7%	-\$1.46 per short ton
<b>Sorted Office Paper</b>			
Regional	-\$70.00 per short ton	-43.8%	-\$0.60 per short ton
National	-\$65.31 per short ton	-42.9%	-\$0.52 per short ton

Of the four separate recycled paper commodities analyzed, none of the average regional prices and none of the average national prices were predicted to increase. The average regional price and the average national price for Mixed Paper are predicted to decline, declining by an

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estimated \$1.39 per ton and by an estimated \$1.21 per ton respectively. The average regional price and the average national price for Sorted Residential Paper are predicted to decline, declining by an estimated \$1.32 per short ton and by an estimated \$1.19 per short ton respectively. The average regional price and the average national price for Paper Corrugated Containers are predicted to decline, declining by an estimated \$1.66 per short ton and by an estimated \$1.46 per short ton respectively and the average regional price and the average national price for Sorted Office Paper are also predicted to decline, declining by an estimated \$0.60 per short ton and by an estimated \$0.52 per short ton respectively. Based on just the historical changes and the predicated future change in regional and national prices, there does not appear to be enough appreciable growth in the recycled paper regional and national markets to support a recycling industry in Northeastern Nevada at the time of publication of this University Center for Economic Development technical report.

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## 4.0 Market Demand and Use of Recycled Materials from Waste Generated in Northeastern Nevada

Despite significant technological improvements and improvements in the processing and production of recycled commodities, the potential use of recycled commodities in component parts or finished products have remained relatively limited. This limitation in the use of recycled commodities in component parts or finished products has been generally attributed to significantly falling prices of recycled commodities (detailed in Section 3.0 of this University Center for Economic Development technical report). This section presents a general overview of the primary ways in which recycled commodities have been used in component parts or finished products. While there is a significant variety of end uses for recycled commodities, this section focuses on the primary ways in which specific recycled commodities, generated from the Northeastern Nevada region, could potentially be used. The potential uses outlined in this section are sorted by primary recycling category and the individual recycling commodities for each primary category as outlined previously in Section 3.0.

### 4.1 Uses for Recycled Plastics

The potential uses of Polyethylene Terephthalate (PET) Baled, Natural High Density Polyethylene (HDPE), and Colored High Density Polyethylene (HDPE) were examined individually for the plastics category. The most common individual component parts, materials and finished goods for PET Baled plastics is presented separately and the most common individual components parts, materials and finished goods for both Natural HDPE plastics and Colored HDPE plastics are presented together.

#### 4.1.a Uses of PET Baled Plastics

PET Baled plastics, in their non-recycled form, carry the number “1” symbol stamped or printed on the bottom of the plastic container using PET Baled plastics. PET Baled plastics is primarily recycled into new PET plastic containers due to its generally lighter weight and relatively more affordable cost when compared to both Natural HDPE plastics and Colored HDPE plastics. These characteristics have generally limited the use of PET Baled recycled plastics in the manufacturing, production and use of new component parts, materials and finished products.

However, in addition to its use in the production of new PET plastic containers, new manufacturing processes have expanded the overall use of PET Baled recycled plastics in component parts, materials and finished products. With increasing commonality, PET Baled recycled plastics are used in the manufacturing of the following additional items:

- Athletic Shoes
- Automotive Parts



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- Fabric Uses in T-Shirt Production
  - Industrial Strapping
  - Luggage and Upholstery
  - Plastic Sheeting and Film Production
  - Production of Long Underwear
  - Polyester Carpet Fiber
  - Sweaters and Fiberfill for Sleeping Bags and Winter Coats

Use of PET Baled recycled plastics has grown throughout a number of various industry sectors and continued use of PET Baled recycled plastics in the production of component parts, materials and finished goods is likely to increase as individual firms expand internal supply chain recycling and their corporate social responsibility programs in response to increased government regulations requiring higher percentage uses of recycled materials in the production of component parts, materials and finished goods and as individual end-use consumer preferences become increasingly insistent that and comfortable with PET Baled recycled plastics being used in the production of end-use consumer goods.

#### 4.1.b Uses of Natural HDPE and Colored HDPE Plastics

Both Natural HDPE and Colored HDPE plastics, in their non-recycled form, carry the number “2” stamped or printed on the bottom of the plastic container using both Natural HDPE and Colored HDPE plastics. Both Natural HDPE and Colored HDPE plastics have higher densities than that of PET Baled plastics, making recycled Natural HDPE and Colored HDPE plastics more suitable for component parts, materials and finished products that require more durability. This higher density, however, often means that the recycling process of Natural HDPE and Colored HDPE plastics requires specialized processing that tends to drive up the cost of both recycled Natural HDPE plastics and Colored HDPE plastics which, in-turn, drives up the cost of the component parts, materials and finished products that contained recycled Natural HDPE and Colored HDPE plastics.

Despite the relatively involved process and higher costs associated with recycled Natural HDPE and Colored HDPE plastics, individual firms and manufactures have begun the process of expanding the overall use of Natural HDPE and Colored HDPE recycled plastics in component parts, materials and finished products. With increasing commonality, Natural HDPE and Colored HDPE recycled plastics are used in the manufacturing of the following additional items:

- Crates for Shipping or Retail Display
- Floor Tiles
- Hardscape Materials (for example, Flowerpots and Gardening Tools)
- Non-Food Bottles and Plastic Containers (for example, Anti-Freeze, Motor Oil, Laundry Cleaners, Various Cleaning Products, Conditioner and Shampoo Products)
- Pipes
- Plastic Lumber (used in Playground Equipment, Outdoor Picnic Tables, and Outdoor Patio Decking Materials)
- Plastic Sheeting and Film Production
- Recycling Bins

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Similar to the increased use of PET Baled recycled plastics, the use of both Natural HDPE and Colored HDPE recycled plastics has grown throughout a number of various industry sectors and continued use of Natural HDPE and Colored HDPE recycled plastics in the production of component parts, materials and finished goods is likely to increase as individual firms further expand internal supply chain recycling and their corporate social responsibility programs in response to increased government regulations requiring higher percentage uses of recycled materials in the production of component parts, materials and finished goods and as individual end-use consumer preferences become increasingly insistent that and comfortable with Natural HDPE and Colored HDPE recycled plastics being used in the production of end-use consumer goods.

## **4.2 Uses for Recycled Metals**

The potential uses of Aluminum Cans Sorted, Aluminum Cans Loose, Steel Cans Sorted Baled, Steel Cans Sorted Densified, Steel Cans Loose, and White Goods Loose (discarded household appliances) recycled metals were each examined individually for the metals category. The most common component parts, materials and finished goods for Aluminum Cans Sorted and Aluminum Cans Loose were examined together and the most common component parts, materials and finished goods for Steel Cans Sorted Baled, Steel Cans Sorted Densified, and Steel Cans Loose were also examined together. The potential uses of recycled White Goods Loose are examined separately.

### **4.2.a Uses of Aluminum Cans Sorted and Aluminum Cans Loose**

The use of recycled Aluminum Cans Sorted and Aluminum Cans Loose has largely been limited to the production of new aluminum cans. While automobile manufacturers have continued to explore the use of recycled aluminum in the production of automobile body component parts, the overall strength and utility of aluminum used in various cans decreases significantly during the recycling process and further decreases after each iteration of the recycling process. This limitation on the overall strength and utility of recycled aluminum, using current recycling processes, has generally limited the overall use of recycled aluminum in new component parts, materials and finished goods that require relatively high levels of strength and durability.

Another primary drawback of using recycled aluminum is the typical requirement that used Aluminum Cans Sorted and used Aluminum Cans Loose must be separated from steel, plastic, and other industrial or municipal waste. This initial sorting process is often labor intensive and drives up the eventual price of finished component parts, materials and finished goods which, in turn, makes the use of recycled Aluminum Cans Sorted and recycled Aluminum Cans Loose largely financially and economically unviable in further downstream supply chain manufacturing and production processes. Unlike increased consumer support for the use of recycled PET Baled plastics and recycled Natural HDPE and Colored HDPE plastics, consumers have generally not supported increased costs of finished end-user goods resulting from the use of recycled Aluminum Cans Sorted and used Aluminum Cans Loose.

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#### 4.2.b Uses of Steel Cans Sorted Baled, Steel Cans Sorted Densified, and Steel Cans Loose

The various uses of recycled Steel Cans Sorted Baled, Steel Cans Sorted Densified, and Steel Cans Loose is significantly greater and more diverse than the potential uses of recycled Aluminum Cans Sorted and recycled Aluminum Cans Loose. This is largely due to the fact that steel can be recycled an infinite number of times without losing its overall strength and durability and the process of recycling steel carries a significantly lower labor cost. Rising steel prices in the United States and across global industrial markets due to rising protectionist trade policies have also made the use of recycled steel in new component parts, materials and finished products increasingly affordable and cost effective.

As a result of the physical properties of recycled steel and the overall cost effectiveness of using recycled steel, individual firms and manufacturers have continued to expand the overall use of recycled Steel Cans Sorted Baled, Steel Cans Sorted Densified, and Steel Cans Loose in the production of a wide variety of component parts, materials and finished products ranging from relatively trivial consumer goods to large-scale industrial and finished good products. With increasing commonality, recycled Steel Cans Sorted Baled, Steel Cans Sorted Densified, and Steel Cans Loose are specifically used in the manufacturing of the following additional items:

- Automobiles
- Bicycle Frames
- Bridges
- Food and Drink Cans
- Paperclips
- Ship Hulls
- Steel Pipes
- Train Tracks

While at least some recycled steel is certainly used in almost any component part, material or finished good that requires the use of steel, the production of automobiles, bicycle frames, bridges, food and drink cans, paperclips, ship hulls, steel pipes, and train tracks especially have seen increased quantities of steel acquired through the specific recycling of Steel Cans Sorted Baled, Steel Cans Sorted Densified, and Steel Cans Loose over the past several decades. The relatively high amount of availability of these sources of steel, along with the ability to recycle steel without compromising its underlying strength and the general increase in raw steel national and global prices, have made these specific sources of recycled steel ideal for the production of the above listed component parts, materials and finished products.

#### 4.2.c Uses of White Goods Loose (Discarded Household Appliances)

Including discarded dishwashers, refrigerators, stovetop ranges, clothes washers and dryers, and other discarded household appliances, the use of recycled White Goods Loose typically involves the dismantling and subsequent recovery, sorting and recycling of individual component metals, plastics and other component materials. The final recovery, sorting and recycling of these various component parts can then be used in other recycling processes and the underlying component recycled materials and commodities are further processed and used in the production

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of eventual component parts, materials and finished goods including the already identified uses of recycled plastic materials and recycled metal materials.

A primary concern regarding the overall market and economic feasibility of utilizing recycled components of White Goods Loose is the high amount of labor used in the recycling of White Goods Loose and the subsequently high labor costs. In addition to the individual dismantlement of the individual discarded household appliance required to separate the various component plastic and metal materials, individual White Goods Loose items may also contain hazardous and potentially dangerous materials that require specialized handling and long-term disposal and storage. These conditions subsequently increase the overall cost of recycling White Goods Loose and the continued decline in the prices for finished recycled plastic and metal commodities have increasingly driven down the overall market and economic feasibility of using the collected recycled commodities from White Goods Loose items in the further downstream production of component parts, materials and finished goods.

### **4.3 Uses for Recycled Paper**

The potential uses of Mixed Paper, Sorted Residential Paper, Paper Corrugated Containers, and Sorted Office Paper were each examined separately. Despite the significant decline in the price of recycled Mixed Paper, Sorted Residential Paper, Paper Corrugated Containers, and Sorted Office Paper over the last several years in both regional and national markets, the use of recycled paper in component parts, materials and finished goods have increased significantly for each of these four recycled paper commodities. However, the various new component parts, materials and finished goods that have used these four recycled paper commodities are of generally low value and generate, on a per unit produced and sold basis, little income for the producer or manufacturer.

#### **4.3.a Uses of Mixed Paper**

The use of recycled Mixed Paper spans a variety of component parts, materials and finished goods as the paper recycling industry has become increasingly efficient. Component parts, materials and finished goods that most commonly use recycled Mixed Paper in the United States include:

- New Paperboard
- Paper Backing of Roof Shingles used in Residential Building Construction
- Paper Bathroom Tissue and Paper Towel Rolls

Similar to growing government regulation requiring minimal levels of recycled plastics in the production of new component parts, materials and finished products and to the growing expectation recycled plastics be used in the production of new component parts, materials and finished products by individual consumers, the use of Mixed Paper in the production of new paperboard, new paper backing of roof shingles, and new paper bathroom tissue and paper towel rolls has increased significantly over the past few decades due to similar governmental regulations and consumer preferences. The largely mature Mixed Paper recycling process has

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also created significant economies of scale for individual manufacturers that make the use of recycled Mixed Paper in these specific finished goods increasingly economically feasible.

#### 4.3.b Uses of Sorted Residential Paper

The uses of Sorted Residential Paper in the production of new component parts, materials and finished products is significantly more varied than the uses of recycled Mixed Paper, recycled Paper Corrugated Containers, and recycled Sorted Office Paper. Component parts, materials and finished goods that most commonly use recycled Sorted Residential Paper in the United States include:

- Berry Boxes (for both Display and Consumer Consumption)
- Building Insulation
- Construction Paper
- Countertops
- Egg Cartons
- Kitty Litter
- Newspaper
- Paperboard
- Paper Plates
- Sheetrock
- Telephone Directories

Again, due to growing government regulation requiring minimal levels of recycled paper in the production of new component parts, materials and finished products coupled with the growing expectation that recycled paper be used in the production of new component parts, materials and finished products by individual consumers, the use of Sorted Residential Paper in the production of various new component parts, materials and finished products has increased significantly over the past few decades. Similar to the relatively mature recycling processes of other types of discarded paper, the relatively mature Sorted Residential Paper recycling process has created significant economies of scale for individual manufacturers that ultimately make the use of recycled Sorted Residential Paper in various component parts, materials and finished goods increasingly economically feasible.

#### 4.3.c Uses of Paper Corrugated Containers

The unique characteristics of recycled Paper Corrugated Containers has generally limited the use of this specific recycled commodity in the production of new component parts, materials and finished goods. Relative to Mixed Paper sources, Sorted Residential Paper, and Sorted Office Paper, the overall amount of recycled Paper Corrugated Containers is relatively limited and collection and recycling processes are somewhat specialized. Component parts, materials and finished goods that most commonly use recycled Paper Corrugated Containers in the United States include:

- New Cardboard and Cardboard Containers
- Paper Bags

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- Paperboard
  - Various New Cardboard Mediums (Boxes and other Packaging Products)

While additional specialized labor and specialized recycled processes are required to recycle used Paper Corrugated Containers, the use of recycled Paper Corrugated Containers in new component parts, materials and finished products has begun to increase in recent years. Improvements in the recycling process of Paper Corrugated Containers, additional increased government regulation regarding the component levels of recycled materials, and increased consumer expectation have each driven new expanded uses of recycled Paper Corrugated Container materials in new component parts, materials and finished goods. Individual recyclers of Paper Corrugated Containers have also seen recent improvements in their individual economies of scale largely due to recent improvements being made in the recycling process of Paper Corrugated Containers and, as a result of these improved economies of scale, have begun to find new economically feasible ways to use recycled Paper Corrugated Containers in the production of new component parts, materials and finished goods.

#### 4.3.d Use of Sorted Office Paper

The uses of Sorted Office Paper in the production of new component parts, materials and finished products is significantly more varied than the uses of recycled Mixed Paper and recycled Paper Corrugated Containers but slightly less varied than the uses of Sorted Residential Paper in the production of new component parts, materials and finished products. Component parts, materials and finished goods that most commonly use recycled Sorted Office Paper in the United States include:

- Bathroom Tissue
- Computer and Printing Paper
- Facial Tissue
- Notebook Paper
- Paper Napkins
- Paper Towels

Increased government regulation requiring the use of recycled paper in the production of these new component parts, materials and finished goods, and increased individual consumer expectation that and acceptance of recycled paper will be used in these new component parts, materials and finished goods, has steadily increased the overall usage of recycled Sorted Office Paper in the production of new bathroom tissue, computer and printing paper, facial tissue, notebook paper, paper napkins, and paper towels. Similar to the recycling of Mixed Paper and Sorted Residential Paper, a fairly mature Sorted Office Paper recycling process has created significant economies of scale for individual manufacturers that, ultimately, make the use of recycled Sorted Office Paper in these specific finished goods increasingly economically feasible despite a relatively low per unit value and per unit of revenue generated from sales for these new component parts, materials and finished goods.

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## 4.4 Uses for Recycled Glass and Rubber

While various uses for varied recycled glass commodities and recycled rubber commodities do presently exist, the overall market and economic feasibility of glass and rubber recycling is difficult to accurately estimate given the general lack of historical regional and national market price data for each recycled commodity. However, despite the uncertainty in market price data, the production of discarded glass and rubber, from both industrial waste sources and municipal solid waste sources, in Northeastern Nevada could potentially be used in the production of new component parts, materials and finished goods. This subsection looks at the potential uses of discarded and then recycled glass and rubber commodities.

### 4.4.a Uses of Recycled Glass

According to the Glass Packaging Institute, originally founded in 1919 as the Glass Container of Association of America, the general properties of glass materials makes it an excellent source of recycled commodities that can be used in the further production of new component parts, materials and finished goods. Glass is 100 percent recyclable and, unlike other recyclable commodities, can endlessly be recycled without any loss in the quality or purity of the glass itself. In 2017 alone, according to the Glass Packaging Institute, approximately 40.0 percent of glass beer and soft drink bottles, approximately 40.0 percent of glass wine and liquor bottles, approximately 15.0 percent of food jars, and approximately 34.0 percent of all other glass container types were recycled in the United States. In certain states, like the state of California that has significantly stricter recycling regulatory requirements and significantly more developed recycling financial incentives, even greater overall percentages of used glass beer and soft drink bottles, glass wine and liquor bottles, foods jars, and other glass container types are recycled. Throughout the United States, various recycled glass commodities are increasingly used in the manufacturing and production of the following items:

- Agriculture and Landscape Applications (Top Dressing, Root Zone Materials, Bunker Sand for Golf Courses)
- Astroturf
- Ceramic Sanitary Ware Production
- Fiberglass Installation Products
- Flux in the Production of Bricks (Construction)
- Glass Containers
- Glass Countertops
- Various Abrasives
- Water Filtration Media

Despite the varied use of recycled glass commodities from various food and beverage glass containers in the production of new component parts, materials and finished goods, largely due the underlying characteristics of these specific recycled glass commodities, the use of disposed glass collected from discarded windows, ovenware, Pyrex and crystal has been limited due to the specific characteristics of these types of glass. Overall, the limitation of using discarded food and beverage glass containers in the production of new component parts, materials and finished goods has, to a degree, limited the overall market and economic feasibility of wide-spread glass

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recycling operations. Successful glass recycling industries have largely been limited to specific geographic locations (municipalities or mid-sized regions) where single-stream recycling is most efficient (the ability to sort out discarded glass from other waste products) or targeted financial incentives, such as the use of deposits on disposable food and beverage glass containers, can be employed. The use of single-stream recycling and financial incentives to encourage the recycling of food and beverage glass containers typically, however, works best in relatively high-density large population centers. The use of financial incentives, in particular, will typically require government investment at either the local or state government level. This has resulted in further limiting the development of wide-spread glass recycling operations.

#### 4.4.b Uses of Recycled Rubber

According to the Institute of Scrap Recycling Industries Inc., a Washington, D.C. based advocacy organization, recycled rubber commodities have been used and continued to be used in a wide variety of applications and in the production of various new component parts, materials and finished goods. Specifically, discarded tires and the recycled rubber commodities that can be produced from discarded rubber tires have been used in a number of industry sectors to produce the following list of new component parts, materials and finished goods:

- Agriculture: Bumpers, Feeders, Livestock Mats, Sheds, and Vegetation Protectors and Windbreaks
- Home and Garden: Benches, Flowerpots, Garden Hoses, Landscaping Mulch, Molded Products (for example, Railroad Ties), and Door Mats.
- Infrastructure: Rubberized Asphalt for Roadway Construction and Maintenance
- Medical: Hospital Floor Surfaces and Tiles
- Playground Surfaces: Mats and Mulch
- Sports: Fitness Mats, Indoor and Outdoor Running Tracks, and Infill for Synthetic Turf Fields

Despite the historical use of recycled rubber commodities in the production of new component parts, materials and finished goods and the overall development of rubber recycling processes in the United States for over the last century, the market for recycled rubber commodities has increased significantly over just the past few decades. Recent rising prices and increased scarcity for raw natural resources for the production of rubber-based component parts, materials and finished products has helped spur this recent growth in the market for recycled rubber commodities. Increased government regulation regarding the disposal of used rubber tires (primarily automobile tires for individual consumer, commercial and industrial uses) and the mandate to recycle disposed of and used rubber tires has also significantly increased the use of recycled rubber commodities in a variety of innovative production processes.

In the United States, most recycled rubber commodities come from the recycling of disposed of and used rubber tires that, again, are generated primarily from discarded and used rubber automobile tires for individual consumer, commercial and industrial uses. The process by which discarded and used rubber is recycled employs two main approaches. First, through ambient shredding, powerful and interlocking knives are used to shred the discarded and used rubber tires into smaller pieces that can be further refined and processed to produce recycled rubber



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commodities that can then be used in the production of new component parts, materials and finished goods. Second, by using a cryogenic process, liquid nitrogen is used to freeze the discarded and used rubber tires to sub-zero temperatures. The frozen tires become extremely brittle and the tire is then placed in an enclosure where they are smashed into smaller pieces for future recycling.

Both the ambient shredding approach and the cryogenic approach to recycling discarded and used rubber tires do not change the chemical composition and make-up of the rubber used in the discarded and used rubber tire. Both approaches also facilitate the removal of non-rubber materials added to the rubber tire at the time of the rubber tire's initial production. Added plastic and metal (mostly steel) materials can be safely and efficiently extracted using both approaches and these added plastic and metal materials can be further recycled and used in the production of other new component parts, materials and finished goods that utilize recycled plastic and metal commodities. The resulting recycled rubber commodities can then be further processed and used in the production of various new component parts, materials and finished goods produced in a variety of industry and commercial sectors.

Similar, however, to the limitations on the wide-spread adoption and use of glass recycling processes, the overall process of recycling rubber and, primarily, discarded and used tires works most efficiently in high-density large population centers. This is mostly due to the specialized recycling process of collected and disposed of rubber and the need for large quantities of collected and disposed of rubber to support these recycling processes. The transportation costs associated with transporting discarded and used rubber tires as well as the finished recycled rubber commodities to and from a centralized rubber recycling facility typically exceed the anticipated revenue that can be earned from the recycled rubber commodities itself. Relatively short transportation distances of both the input (the discarded and used rubber tires) and the output (the finished recycled rubber commodity) from the source and to the end user is typically needed to improve the overall economic feasibility of any rubber recycling process.

Furthermore, single-stream recycling of discarded and used rubber tires have proved largely ineffective and infeasible in the rare instances that single-stream recycling processes in which discarded and used rubber tires have been included in. The development and employment of strict government regulations that control and require the disposal of discarded and used rubber tires with the included use of 'reverse' financial incentives, where the individual user of the now discarded and used rubber tire is required to pay a recycling or disposal fee, are often both needed in tandem to support the recycling and proper and safe disposal of discarded and used rubber tires.

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## **5.0 Outline and Overview of a Recycling Industry in Northeastern Nevada**

At the time of publication of this University Center for Economic Development technical report, strictly private-sector based recycling of various industrial waste materials and municipal waste materials within the Northeastern Nevada region is neither technically or economically feasible. The current amount of industrial waste materials and municipal waste materials generated within the Northeastern Nevada region is not sufficient to provide high enough quantities to support wide-scale recycling within the region and current regional and national prices of various recycled commodities, including the prices for plastic, metal and paper recycled commodities, are too low to support profitable wide-scale private-sector recycling. However, the continued economic and population growth of the region, combined with the continued expanded use of recycled commodities in the production of various new component parts, materials and finished goods, indicates that a private-sector based recycling industry in Northeastern Nevada may be feasible in the future. In the meantime, public-sector support of a new recycling industry in Northeastern Nevada will be needed.

This section presents an overview of several recycling programs created and initially managed by a public-sector entity or organization that could either be employed in Northeastern Nevada or modeled to develop a future recycling industry for the region. Two programs piloted by the Nevada Division of Environmental Protection, including a new hub and spoke rural recycling program and a new rural landfill reduction, diversion, and household hazardous waste collection program, are first presented. Details of the Pennsylvania Recycling Markets Center, the New Mexico Rubberized Asphalt Concrete Pavements Program, and the New Mexico Tire-Bale Erosion Control and Bank Stabilization Program are also presented in this section.

### **5.1 Nevada Division of Environmental Protection Hub and Spoke Rural Recycling Program**

The Nevada Division of Environmental Protection is currently exploring the potential development of a hub and spoke rural recycling program that could be employed in Nevada and, specifically, within the Northeastern Nevada region. Nevada's potential hub and spoke rural recycling program is largely modeled off of the hub and spoke recycling program developed by the state of New Mexico and the New Mexico Recycling Coalition. The New Mexico hub and spoke recycling program has been specifically designed to overcome the various barriers to rural (or non-metro) recycling initiatives that often exist including a lack of sufficient quantities of recyclable industrial waste and municipal solid waste and the high transportation requirements that erode overall recycling program efficiency.

Efficient collection and basic processing of materials is achieved through the hub and spoke model by creating regional recycling collection and processing centers that are located in larger yet still non-metro communities. These recycling collection and processing centers serve as

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‘hubs’ and individual smaller communities, the ‘spokes’, deliver their recyclable industrial waste and municipal solid waste to the hubs. The hubs are responsible for developing the required capital equipment and infrastructure needed to create and store high density bales of recycled commodities that remanufacturing markets can then utilize. The spokes are, in-turn, responsible for purchasing and using the recycling collection trailers and containers. Mobile drop-off stations located in the smaller spoke communities can then be transported to the nearby recycling hubs for further sorting and processing. In New Mexico, this hub and spoke rural recycling program has proven capable of significantly reducing associated transportation costs and in successfully collecting enough recyclable industrial waste and municipal solid waste to increase the overall efficiency of recycling operations in rural or non-metro communities and regions.

The New Mexico hub and spoke rural or non-metro recycling program has also proven capable of providing individuals, firms, and entire communities reliable and continued access to recycling of waste, has proven to be a replicable design that has been successfully employed throughout the state, capable of overcoming limiting transportation issues present in rural and non-metro communities and regions, capable of consolidating marketable volumes of recyclable waste, and capable for generating sufficient revenues to generally cover the cost of operations. However, the New Mexico Recycling Coalition has found it necessary to provide specific grants to individual communities and hub and spoke recycling programs throughout the state to support development and eventual implementation of this program. In December 2010, the New Mexico Recycling Coalition awarded three separate \$309,820 grants to three individual hub and spoke communities (Torrance County with a population of 16,269 total individuals, Otero County with a population of 62,776 total individuals, and the City of Deming with a surrounding regional population of 32,137 total individuals) for a total of \$929,460 awarded. In April 2011, the New Mexico Recycling Coalition awarded a total of \$385,060 to four additional counties and communities to start-up a hub and spoke recycling program and, in February 2012, awarded an additional \$590,303 to eight separate counties and communities for various ‘spoke’ equipment purchases and various ‘hub’ improvement processes.

A typical sample hub project as part of the hub and spoke program in New Mexico requires significant upfront capital investment, mostly in the purchase of equipment as well as the securing of a physical location where various ‘hub’ recycling processes can be implemented and completed. In general, the required ‘hub’ equipment includes the following items with an estimation of potential costs per item:

- Horizontal Baler with In-Pit Conveyor, Excel EX63 with 3-Phase Converter (est. cost of \$97,689)
- Fork Lift (est. cost of \$24,817)
- Portable Loading Dock (est. cost of \$11,019)
- Roll-Off Collection Equipment (est. cost of \$50,473)
- Structure, approx. 3,000 square feet (est. cost of \$125,822)

Total cost of this required ‘hub’ equipment is \$309,820 and does not include acquisition and potential demolition and remediation of an appropriate physical site for the ‘hub’ recycling processes or associated direct and indirect labor costs. The New Mexico Environment Department’s ‘Balers and Trailers’ program is sufficiently down-sized from the much more

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developed hub and spoke recycling program developed by the New Mexico Recycling Coalition. This ‘Balers and Trailers’ program, that is designed to utilize either an existing city or county-owned empty warehouse or building already located at a landfill or transfer station, is estimated to cost \$150,000 (again, excluding direct and indirect labor costs) with an estimated \$87,738 allocated for acquisition of a Horizontal Baler with In-Pit Conveyor (Gemini EX), \$3,102 for required Electrical and Concrete Work, and \$59,160 for the acquisition of needed Roll-Off Collection Equipment.

‘Spoke’ community needed equipment generally consists of Roll-Off Containers and Recycling Trailers that can be transported to the ‘hub’ community where the contents can then be unloaded and further processed. Typical ‘spoke’ activities associated with the hub and spoke recycling program generally consist of hauling, locating, right-sizing, security, unloading, and switch-out of the Roll-Off Containers and Recycling Trailers. Individual costs will vary and both direct and indirect labor costs must also be estimated.

In New Mexico, this hub and spoke rural or non-metro recycling program has proven itself as a useful template suitable for smaller non-metro communities interested in economically developing a regional recycling processing facility. The infrastructure and equipment needed to stand-up a hub and spoke recycling program has been purposefully designed for simplicity in order to minimize total investment costs. The experience in New Mexico has proven generally successful although existing hub and spoke recycling programs have found it recently necessary to plan for and develop additional storage of both loose and baled input and output materials. Having cross-trained staff onsite at the ‘hub’ recycling center has also proven important for the hub and spoke recycling program’s overall success.

## **5.2 Nevada Division of Environmental Protection Rural Landfill Reduction, Diversion, and Household Hazardous Waste Collection Program**

The Nevada Division of Environmental Protection has recently enacted a new rural landfill reduction, diversion, and household hazardous waste collection pilot program thanks in part to a U.S. Department of Agriculture Solid Waste Management Grant. This pilot program is part of a larger Rural Water Protection Project developed and administered by the Nevada Division of Environment Protection. Begun in late 2019, the program is anticipated to run through September 2020 where the pilot program will be reviewed and evaluated. Note that the full implementation of this pilot program has been disrupted and somewhat delayed due to the current impacts of the COVID-19 global pandemic that has resulted in stay-at-home orders and restriction on travel and commercial activity in Nevada since March 2020.

The pilot communities selected for this initial trial program and project include the town Goldfield (Esmeralda County), the town of Eureka (Eureka County), the town of Battle Mountain (Lander County), the town of Hawthorne (in Mineral County), and the town of Tonopah (Nye County). It should be noted that the town of Eureka and Eureka County and the town of Battle Mountain and Lander County are each located within the existing boundaries of the Northeastern Nevada Regional Development Authority.

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The primary goal of this pilot program is, according to the Nevada Division of Environmental Protection, to educate and support five initial rural communities in developing and implementing a household hazardous waste diversion and disposal program which can then serve as a model for the remaining counties in Nevada. Two specific objectives have also been developed as part of this pilot program, including: (1) assistance to landfills in reevaluating their standard operating procedures which may lead to securing additional sustainable funding for a county-located household hazardous waste collection event, and (2) reduction of the risk of infiltration and contamination of rural water sources. As a state, the protection of water resources is critical to the long-term survival and growth of Nevada's communities. In rural Nevada especially, household hazardous waste collection services tend to be limited or even non-existent. The collection and proper disposal of household hazardous materials through this pilot program is designed to help protect the state's existing water resources from pollution by reducing the threat of contamination at the landfill and to the surrounding environment from illegal dumping and improper disposal of household hazardous materials.

The work plan for the initial pilot program consists of four separate and interrelated components including: (1) landfill operator training and on-site evaluation, (2) public outreach and education, (3) collection event preparation, and (4) household hazardous waste collection event and program assessment. The first component, landfill operating training and on-site evaluation, generally consists of the development of a curriculum that will be developed in conjunction with pilot program management in order to establish a salvaging and diversion program at each targeted landfill facility in Esmeralda County, Eureka County, Lander County, Mineral County, and Nye County. This training will include, but is not limited to, educating the targeted landfill facility and facility operator(s) on the potential markets for salvaged materials and recyclables and how to hold a household hazardous waste collection event.

The second component, public outreach and education, will be completed by the individual participating county in cooperation with representatives from the Nevada Division of Environmental Protection. Outreach and education will consist of information about the salvaging program and the individual household hazardous waste collection event that will be developed for and conducted in each initially targeted landfill facility. Identification of the effects household hazardous waste has on the environment and how the community can implement selected best management practices to manage their waste, including proper prescription drug disposal, will also be included in the public outreach and education component.

The third component, collection event preparation, will be done in conjunction with the Nevada Division of Environmental Protection and the University of Nevada, Reno's Business Environmental Program in order to verify that each of the targeted landfill facilities is prepared for the household hazardous waste collection event. Representatives from the Nevada Division of Environmental Protection and the Business Environment Program will work with each of the five selected pilot program counties to develop a household hazardous waste collection event plan. Personal protection, Nevada regulatory overview, proper handling techniques, collection and disposal methods, prescription drug disposal, and community involvement and participation are a few of the various topics that will be included in this third component.

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The fourth and final component of this pilot Rural Water Protection Project, household hazardous waste collection event and program assessment, will generally require that Nevada Division of Environmental Protection and Business Environmental Program representatives to be on site during each of the five household hazardous waste collection events held at each of the targeted landfill facilities to provide support and guidance. Once each event has been completed, the Nevada Division of Environmental Protection will evaluate each individual event using feedback provided by the participating landfill operators and county personnel. The overall success of achieving this pilot project's goal and the individual objectives will be evaluated and, based upon the results of this evaluation, the Nevada Division of Environmental Protection and the Business Environmental Program will further update and refine the curriculum and approaches to further develop a statewide program for landfills operating throughout the entire state.

Again, it should be noted that the initial completion of this pilot Rural Water Protection Project was scheduled for September 2020. However, the recent impacts of the COVID-19 global pandemic in Nevada has delayed implementation of certain parts of the above outlined work plan. As the pilot project has not been completed and because no definitive evaluation results were available at the time of publication of this University Center for Economic Development technical report, the effectiveness of this program's potential for helping stand-up and build a recycling industry in Northeastern Nevada is currently unknown. The Northeastern Nevada Regional Development Authority should, however, work closely with both the Nevada Division of Environmental Protection and the University of Nevada, Reno's Business Environmental Program to evaluate the final results of this pilot project and evaluate the overall potential of the program to further support the development of a recycling industry in Northeastern Nevada.

### **5.3 Pennsylvania Recycling Markets Center**

The Pennsylvania Recycling Markets Center's, organized as a 501c(3) corporation, stated mission is to be:

*“...a leader in developing and expanding recycling markets in Pennsylvania. In a competitive global marketplace, the RMC (Recycling Markets Center) is the keystone clearing house of environmental, economic development, and manufacturing resources for end use support of recycled commodities and products. The RMC is headquartered at Penn State Harrisburg with satellite offices near Pittsburgh. The Mission of the RMC is to expand and develop more secure and robust markets for recovered (recycled) materials by helping to overcome market barriers and inefficiencies.”*

While the Pennsylvania Recycling Markets Center is not an actual recycling program, in that the Pennsylvania Recycling Markets Center does not operate any direct waste collection and recycling facility, the Center accomplishes their mission through the performance and activity and provision of technical assistance in four primary areas, including: (1) economic development, (2) accelerated commercialization, (3) general technical assistance, and (4) recycling markets intelligence through the Center's Outreach Portal. Success in each of these four areas is measured through direct and indirect job creation, the amount of total waste

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collected and diverted from area landfills and successfully recycled, and in the amount of measured energy savings generated these activities. Overall, the Pennsylvania Recycling Markets Center reports on both the environmental and economic impacts of their activities in each of these four primary areas. In the area of economic development, the Pennsylvania Recycling Markets Center focuses on increasing the use of recycled materials and commodities for the production of future component parts, materials and finished goods in order to generate and create new employment opportunities throughout the state of Pennsylvania.

In the area of accelerated commercialization, the Pennsylvania Recycling Markets Center utilizes their existing partnership with Pennsylvania State University and other public and private research partners to assist with the overall design of products made from recycled commodities and provide the needed information on design and development processes to individual Pennsylvania-based businesses. In the area of technical assistance, the Pennsylvania Recycling Markets Center works with various private-sector and non-profit partners to provide specific point-of-service based, pre-emergence, and existing business consultative assistance. In the area of recycling markets intelligence through the Center's Outreach Portal, the Pennsylvania Recycling Markets Center leverages its various research partnerships to provide requested information and analysis on a variety of topics to recycling markets and Pennsylvania-based businesses.

Key programs that the Pennsylvania Recycling Markets Center current administers are the Center of Excellence, the Commodity Pricing Program, and GreenCircle Certified Program. The Center of Excellence is a partnership between the Pennsylvania Recycling Markets Center and the Ben Franklin Technology Partners of Northern and Central Pennsylvania. The Center for Excellence itself is a network for individual processors of recycled materials, end-users of recycled materials, and various non-profit organizations to influence materials markets throughout the state of Pennsylvania. The Pennsylvania Recycling Markets Center uses the resources and relationships of the Center of Excellence to execute their goal of connecting with individual businesses and providing them with requested technical support and with emerging business opportunities.

The Commodities Pricing Program is an online commodities pricing index that provides real-time changes in regional and national recycled commodities and materials prices. The Commodities Pricing Program is maintained and administered by the Pennsylvania Recycling Markets Center. Recycled commodity information is available to registered Pennsylvania County Recycling Coordinators through the strategic partnership formed between the Pennsylvania Recycling Markets Center and RecyclingMarkets.net. The Pennsylvania Recycling Markets Center partnered with GreenCircle Certified, LLC to develop and implement the GreenCircle Certified Program for Pennsylvania. This program certifies the production of component parts, materials and finished goods made with recycled materials. The GreenCircle Certified Program helps the Pennsylvania Recycling Markets Center enhance its mission of building functioning, sustainable and growing recycling markets throughout the state by driving an increase in the use of recycled raw materials and commodities in the manufacturing and sale of more products with verified recycled materials content.

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## 5.4 New Mexico Rubberized Asphalt Concrete Pavements Program

In June 2011, Dr. Paola Bandi, P.E. with the Department of Civil Engineering at New Mexico State University, published *Rubberized Asphalt Concrete Pavements in New Mexico: Market Feasibility and Performance Assessment*, prepared for the New Mexico Environmental Department and the South Central Solid Waste Authority. The purpose of this market feasibility and performance assessment study was to evaluate the performance of pavements with rubberized open-graded friction course (ROGFC) overlays used throughout the state of New Mexico and develop a preliminary feasibility evaluation of the crumb rubber modified market within the state.

Crumb rubber is generally produced by shredding and grinding discarded and used rubber tires after other added materials, including plastics and metal, are removed. Small particles of recycled rubber are produced in this process and crumb rubber of different gradation and particle size can be used to produce asphalt-rubber binders and rubberized asphalt binders. These binders are typically referred to as crumb rubber modifiers (CRM). Using a ‘wet process’, the resulting crumb rubber modifiers can be combined with asphalt cement and other additives and eventually used in road construction and repair activities. Spearheaded by the New Mexico Department of Transportation and the New Mexico Environmental Department, the resulting mixture of crumb rubber modifiers, asphalt cement and other additives have been used over the past two decades in road construction and repair with early trials beginning in the 1980’s and 1990’s and with wide-scale usage beginning in the early 2000’s. In 2002 and 2007, the New Mexico Department of Transportation completed two separate road construction projects utilizing a thin rubberized open-graded friction course overlay, one for U.S. Highway 54 and one for U.S. Highway 62/New Mexico State Highway 180. Over the past decade, various local municipal and county governments throughout the state of New Mexico have employed the use of rubberized asphalt in various street rehabilitation on a limited basis.

The evaluation of the U.S. Highway 54 and U.S. Highway 62/New Mexico State Highway 180 New Mexico Department of Transportation projects completed by Dr. Paola Bandi in June 2011 found good performance in the early life of the utilized pavement structure with no rutting and either very minor distress or no premature cracking in the pavement. For the U.S. Highway 54 project, the resulting statistical analysis and assessment provided an indication of better pavement performance, in-terms of distress rate, when compared to a selected set of traditional, or non-rubberized open-graded friction course overlays, sampled projects located on the same highway and general geographic areas. While the assessment completed by Dr. Paola Bandi of the U.S. Highway 54 and U.S. Highway 62/New Mexico State Highway 180 projects did not include control sections was not part of a comprehensive experimental program, the preliminary assessment indicated that the rubberized open-graded friction course overlays, produced by combined crumb rubber with asphalt concrete and other additives, proved promising indications of better performance in both the short-term and long-term than similar non-rubberized open-graded friction course overlays.

Dr. Paola Bandi’s economic assessment of the production and use of crumb rubber modifiers in pavement applications in the state of New Mexico showed initial economic and environmental benefits. The main components of this economic and environmental assessment included the



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identification and analysis of the necessary processing and manufacturing equipment, current material producers, suppliers of crumb rubber modifier materials, sources of discarded and used rubber tires, and initial investment costs. Dr. Paola Bandi found that the development and completion of a facility needed to produce the rubberized open-graded friction course overlays required a high initial capital investment, produced a constant annual demand for approximately 9,000 tons of crumb rubber modifier, and a reliable source of approximately 1.25 million discarded and used rubber tires annually.

For Northeastern Nevada, the New Mexico rubberized asphalt concrete pavements program may be suitable for trial projects at the community level and for large scale industrial and commercial firms with generally restricted access but with significantly high demand for generally inexpensive pavement materials. Possible state and local government regulatory statutes may require modification and controlled study and evaluation of the use of rubberized open-graded friction course overlays will have to be conducted, completed and analyzed in order to evaluate the potential effectiveness of this type of course overlay in Nevada. However, the development of specialized facilities and the purchasing of specialized equipment and materials to first produce the crumb rubber modifier and then the rubberized open-graded friction course overlays may be possible through the development and execution of a public-private partnership between the Northeastern Nevada Regional Development Authority and a single or set of large industrial or commercial private-sector firms willing to utilize these materials.

## **5.5 New Mexico Tire-Bale Erosion Control and Bank Stabilization Projects**

In July 2012, the New Mexico Department of Transportation published an investigatory and research project, *Standards for Tire-Bale Erosion Control and Bank Stabilization Projects: Validation of Existing Practice and Implementation*. This investigatory and research project was designed as part of a larger statewide initiative to promote the use of a growing stockpile of discarded and used rubber tires in the state and meet the growing demand for needed backfill material in highway construction. This investigatory and research project was further designed to determine whether or not compressed tire-bales could be used as a cost-effective alternative to traditional fill materials for erosion control and bank stabilization projects in the state.

While the production of tire-bales does not require specific recycling processes, including the removal of plastic and metal additives and the production of crumb rubber modifiers, the resulting investigatory and research project completed by the New Mexico Department of Transportation concluded that the tire-bale structure itself requires that the structure remain stable under possibly unpredictable load conditions during the life span of the resulting structure. Initial concern about using tire-bales for erosion control and bank stabilization projects was the potential intrusion of water behind the structure and the possible failure of the structure itself. Further concerns regarding the use of tire-bales for erosion control and bank stabilization projects was the contact between the soil itself and the tire-bale fill structure. Scouring at the contact point between a stream and the tire-bale structure has been found to potentially allow water to get in behind the structure, eventually leading to failure.

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Using proper and recommended guidelines for the construction of tire-bale structures and their proper placement and use in erosion control and bank stabilization projects was determined to be an acceptable approach to erosion control and bank stabilization. The authors of this New Mexico Department of Transportation investigatory and research project found that the development of failure in tire-bale erosion control and bank stabilization structures could likely be traced to a faulty structural design in the tire-bale structures themselves or in an inadequate and incomplete understanding and control of site-specific surface and subsurface water infiltration.

For Northeastern Nevada, the New Mexico Department of Transportation's approach to the use of tire-bales in erosion control and bank stabilization projects may be suitable for trial projects at the community level and for large scale industrial and commercial firms with generally restricted access but with significantly high demand for inexpensive fill materials. Possible state and local government regulatory statutes may require modification and controlled study and evaluation of the use of discarded and used tires in the production of relatively inexpensive tire-bale structures for use in erosion control and bank stabilization projects will have to be conducted, completed and analyzed in order to evaluate the potential effectiveness of this approach.

For Northeastern Nevada, this approach and the use of discarded and used rubber tires in the construction of tire-bale structures could quickly and affordably solve the region's need for addressing a growing supply of discarded and used tires with minimal upfront capital investment. Beyond the use of these tire-bales in erosion control and bank stabilization projects for large-scale industrial and commercial use, there are possible applications of this approach in the region's relatively large agricultural industry sector and even possibly in the stabilization of mine tailing piles located throughout the region. Possible future public-private partnerships between the Northeastern Nevada Regional Development Authority and a single or set of large industrial or commercial private-sector firms willing to test the use of tire-bale structures in a limited piloted setting may be required.

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**Appendix A – Recyclable Waste Types and Amount of Waste for Individual  
Mine Sites Operated by Nevada Gold Mines within the Northeastern Nevada  
Regional Development Authority Area**

<b>Table A.1 – Recyclable Waste Types and Amounts Produced Nevada Gold Mines – Long Canyon 2018</b>	
<b>Recyclable Waste Type</b>	<b>Amount Produced (in Number of Units, Kilograms, Cubic Meters or Metric Tons/Tonnes)</b>
Plastic	33.1 (Metric Tonnes)
Paper	49.7 (Metric Tonnes)
Pallets	-
Cardboard (Onsite)	-
Cardboard (Offsite)	33.1 (Metric Tonnes)
HDPE Pipe/Liner	-
Used Oil	79.76 (Cubic Meters)
Used Antifreeze	23.32 (Cubic Meters)
Batteries (Lithium)	-
Batteries (Lead)	-
Batteries (Alkaline)	-
Batteries	6.7 (Metric Tonnes)
Electronics	1.0 (Metric Tonnes)
Lamps/Bulbs	1.0 (Metric Tonnes)
Ink Cartridges	50.0 (Number of Units)
Ink Cartridges	-
Food Waste	49.7 (Metric Tonnes)
Tires – Large (Onsite)	52.0 (Number of Units)
Tires – Large	-
Tires – LV	224.0 (Number of Units)
Tires – LV	-
Metal	52.9 (Metric Tonnes)
Totes/Containers	2.3 (Metric Tonnes)
Aluminum Cans	-

*Source: Nevada Gold Mines, 2019*

<b>Table A.2 – Recyclable Waste Types and Amounts Produced Nevada Gold Mines – Carlin Complex (Barrick Legacy) 2018</b>	
<b>Recyclable Waste Type</b>	<b>Amount Produced (in Number of Units, Kilograms, Cubic Meters or Metric Tons/Tonnes)</b>
Plastic	-
Paper	-
Pallets	-
Cardboard (Onsite)	-
Cardboard (Offsite)	17.5 (Metric Tonnes)
HDPE Pipe/Liner	-
Used Oil	520.48 (Cubic Meters)
Used Antifreeze	27.22 (Cubic Meters)
Batteries (Lithium)	-
Batteries (Lead)	-
Batteries (Alkaline)	-
Batteries	1.52 (Metric Tonnes)
Electronics	4.75 (Metric Tonnes)
Lamps/Bulbs	-
Ink Cartridges	-
Ink Cartridges	-
Food Waste	-
Tires – Large (Onsite)	-
Tires – Large	1,000.0 (Number of Units)
Tires – LV	-
Tires – LV	-
Metal	3,206.37 (Metric Tonnes)
Totes/Containers	-
Aluminum Cans	-

*Source: Nevada Gold Mines, 2019*

<b>Table A.3 – Recyclable Waste Types and Amounts Produced Nevada Gold Mines – Carlin Complex (Newmont Legacy) 2018</b>	
<b>Recyclable Waste Type</b>	<b>Amount Produced (in Number of Units, Kilograms, Cubic Meters or Metric Tons/Tonnes)</b>
Plastic	-
Paper	-
Pallets	-
Cardboard (Onsite)	-
Cardboard (Offsite)	2.23 (Metric Tonnes)
HDPE Pipe/Liner	56.49 (Metric Tons)
Used Oil	1,068.55 (Cubic Meters)
Used Antifreeze	116.13 (Cubic Meters)
Batteries (Lithium)	-
Batteries (Lead)	-
Batteries (Alkaline)	-
Batteries	46.96 (Metric Tonnes)
Electronics	12.16 (Metric Tonnes)
Lamps/Bulbs	-
Ink Cartridges	-
Ink Cartridges	-
Food Waste	-
Tires – Large (Onsite)	-
Tires – Large	-
Tires – LV	1,000.0 (Number of Units)
Tires – LV	-
Metal	3,482.25 (Metric Tonnes)
Totes/Containers	-
Aluminum Cans	-

*Source: Nevada Gold Mines, 2019*

<b>Table A.4 – Recyclable Waste Types and Amounts Produced Nevada Gold Mines – Cortez 2018</b>	
<b>Recyclable Waste Type</b>	<b>Amount Produced (in Number of Units, Kilograms, Cubic Meters or Metric Tons/Tonnes)</b>
Plastic	-
Paper	-
Pallets	-
Cardboard (Onsite)	-
Cardboard (Offsite)	-
HDPE Pipe/Liner	-
Used Oil	1,060.0 (Cubic Meters)
Used Antifreeze	-
Batteries (Lithium)	0.18 (Metric Tonnes)
Batteries (Lead)	4.35 (Metric Tonnes)
Batteries (Alkaline)	-
Batteries	-
Electronics	1.1 (Metric Tonnes)
Lamps/Bulbs	164.2 (Metric Tonnes)
Ink Cartridges	136.0 (Number of Units)
Ink Cartridges	-
Food Waste	-
Tires – Large (Onsite)	700.0 (Number of Units)
Tires – Large	-
Tires – LV	1,500.0 (Number of Units)
Tires – LV	-
Metal	24,000.0 (Metric Tonnes)
Totes/Containers	-
Aluminum Cans	-

*Source: Nevada Gold Mines, 2019*

<b>Table A.5 – Recyclable Waste Types and Amounts Produced Nevada Gold Mines – Phoenix 2018</b>	
<b>Recyclable Waste Type</b>	<b>Amount Produced (in Number of Units, Kilograms, Cubic Meters or Metric Tons/Tonnes)</b>
Plastic	1,814.0 (Metric Tonnes)
Paper	2,721.0 (Metric Tonnes)
Pallets	8.26 (Metric Tonnes)
Cardboard (Onsite)	1,814.0 (Metric Tonnes)
Cardboard (Offsite)	-
HDPE Pipe/Liner	56.23 (Metric Tonnes)
Used Oil	1,211.0 (Cubic Meters)
Used Antifreeze	3.13 (Cubic Meters)
Batteries (Lithium)	-
Batteries (Lead)	-
Batteries (Alkaline)	-
Batteries	8.04 (Metric Tonnes)
Electronics	1.36 (Metric Tonnes)
Lamps/Bulbs	246.75 (Metric Tonnes)
Ink Cartridges	48 (Number of Units)
Ink Cartridges	-
Food Waste	4.45 (Metric Tonnes)
Tires – Large (Onsite)	114.0 (Number of Units)
Tires – Large	-
Tires – LV	269.0 (Number of Units)
Tires – LV	-
Metal	3,317.0 (Metric Tonnes)
Totes/Containers	0.45 (Metric Tonnes)
Aluminum Cans	-

*Source: Nevada Gold Mines, 2019*



<b>Table A.6 – Recyclable Waste Types and Amounts Produced Nevada Gold Mines – TC 2018</b>	
<b>Recyclable Waste Type</b>	<b>Amount Produced (in Number of Units, Kilograms, Cubic Meters or Metric Tons/Tonnes)</b>
Plastic	-
Paper	-
Pallets	-
Cardboard (Onsite)	-
Cardboard (Offsite)	-
HDPE Pipe/Liner	-
Used Oil	314.50 (Cubic Meters)
Used Antifreeze	16.24 (Cubic Meters)
Batteries (Lithium)	-
Batteries (Lead)	-
Batteries (Alkaline)	-
Batteries	3.9 (Metric Tonnes)
Electronics	-
Lamps/Bulbs	244.94 (Metric Tonnes)
Ink Cartridges	-
Ink Cartridges	-
Food Waste	-
Tires – Large (Onsite)	257.0 (Number of Units)
Tires – Large	-
Tires – LV	9.07 (Number of Units)
Tires – LV	-
Metal	479.0 (Metric Tonnes)
Totes/Containers	-
Aluminum Cans	-

*Source: Nevada Gold Mines, 2019*

<b>Table A.7 – Recyclable Waste Types and Amounts Produced Nevada Gold Mines – TR 2018</b>	
<b>Recyclable Waste Type</b>	<b>Amount Produced (in Number of Units, Kilograms, Cubic Meters or Metric Tons/Tonnes)</b>
Plastic	0.127 (Metric Tonnes)
Paper	0.753 (Metric Tonnes)
Pallets	-
Cardboard (Onsite)	-
Cardboard (Offsite)	-
HDPE Pipe/Liner	-
Used Oil	98.19 (Cubic Meters)
Used Antifreeze	-
Batteries (Lithium)	-
Batteries (Lead)	-
Batteries (Alkaline)	-
Batteries	0.37 (Metric Tonnes)
Electronics	0.07 (Metric Tonnes)
Lamps/Bulbs	143.34 (Metric Tonnes)
Ink Cartridges	-
Ink Cartridges	-
Food Waste	-
Tires – Large (Onsite)	540.0 (Number of Units)
Tires – Large	-
Tires – LV	1,100.0 (Number of Units)
Tires – LV	-
Metal	654.15 (Metric Tonnes)
Totes/Containers	-
Aluminum Cans	0.10 (Metric Tonnes)

*Source: Nevada Gold Mines, 2019*

**A COMPREHENSIVE ECONOMIC DEVELOPMENT  
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# **A COMPREHENSIVE ECONOMIC DEVELOPMENT STRATEGY FOR THE NORTHEASTERN NEVADA REGIONAL DEVELOPMENT AUTHORITY, 2020 THROUGH 2025**

Frederick A. Steinmann

Frederick Steinmann is an Assistant Research Professor with the University Center for Economic Development, College of Business at the University of Nevada, Reno.

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Frederick A. Steinmann, DPPD  
University Center for Economic Development  
University of Nevada, Reno  
The College of Business  
Mail Stop 204  
Reno, Nevada 89557  
Phone: 775.784.1655



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Development Authority Board on Wednesday, July 22, 2020***

**Chairperson of the Board and Board Member**

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**A COMPREHENSIVE ECONOMIC DEVELOPMENT  
STRATEGY FOR THE NORTHEASTERN NEVADA REGIONAL  
DEVELOPMENT AUTHORITY, 2020 THROUGH 2025**

***Received and Approved for Submission to the U.S. Economic  
Development Administration by the Northeastern Nevada Regional  
Development Authority Board on Wednesday, July 22, 2020***

**Staff Members**

Sheldon Mudd  
Executive Director

Jan Morrison  
Economic Development Officer

Donna Bath  
Economic Development Officer

Kris Ashdown  
Executive Assistant



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# Northeastern Nevada Regional Development Authority Comprehensive Economic Development Strategy 2020 through 2025

## Economic Development Vision

*In order to overcome the impacts of a 'boom and bust' economic cycle, the Northeastern Nevada Regional Development Authority will work to create sustainable economic growth through the promotion and support of the region's targeted industry sectors while building long-term capacity in select economic development capacity building areas.*

*While respecting and seeking to preserve each community's own values and culture and by working together, the Northeastern Nevada Regional Development Authority will provide increased support and pursue increased expansion of region's existing workforce, business community, and residential population through capacity building, business recruitment, expansion and retention efforts, and improved sustainable development.*

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# Northeastern Nevada Regional Development Authority Comprehensive Economic Development Strategy 2020 through 2025

## Priority Goals – Targeted Industry Sectors

### Targeted Industry Sector No. 1, *Agriculture*

- Goal No. 1:** Five new agricultural product processing facilities over four years by 2022.
- Goal No. 2:** Identify new added value diversified crops opportunities for farmers in the region by December 2021.
- Goal No. 3:** Increase sole proprietors growing or processing foods to retail customers from 100 percent to 200 percent in the Northeastern Nevada Regional Development Authority region by December 2022.
- Goal No. 4:** Increase accessibility to locally grown foods by 20 percent in the next five years.

### Targeted Industry Sector No. 2, *Healthcare*

- Goal No. 1:** Partner with urban health care systems to bring specialized medicine to rural communities, women's health, senior living, cancer treatment in the next five years.
- Goal No. 2:** To establish a medical health educational and behavioral facility fully staffed by 2021.
- Goal No. 3:** Increase availability and utilization of local healthcare services within the Northeastern Nevada Regional Development Authority region by 10 percent over five years (2 percent per year).
- Goal No. 4:** Work with healthcare providers to prepare a study of cost comparison in rural Nevada areas without larger medical facilities within two years.

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# Northeastern Nevada Regional Development Authority Comprehensive Economic Development Strategy 2020 through 2025

## Priority Goals – Targeted Industry Sectors

### Targeted Industry Sector No. 3, *Mining*

- Goal No. 1:** Increase mining related supply chain companies by 20 percent at open ‘bricks & mortar’ by 2022.
- Goal No. 2:** Each region to increase their utilization of industrial zoned property by 20 percent by providing the essential infrastructure to support new mining-related business by 2022.
- Goal No. 3:** Increase local processing and utilization (i.e. making batteries, value-added) of mined materials by 15 percent by December 2024.
- Goal No. 4:** Develop and launch a broad spectrum mining campaign to educate the world on the importance of mining by 2021.
- Goal No. 5:** Regional approach with mining industries; partner with mining industry and schools to recruit a workforce; develop a recruiting process with mining industry partners to meet the workforce demand for the next five years.

### Targeted Industry Sector No. 4, *Outdoor-Oriented Tourism and Recreation*

- Goal No. 1:** Create three experiential recreation opportunities that draw people from outside the region by December 2024.
- Goal No. 2:** Identify additional regional tourism oriented, create guide for opportunities.
- Goal No. 3:** Increase in tourism room tax revenue by 25 percent in our region by 2022.

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# Northeastern Nevada Regional Development Authority Comprehensive Economic Development Strategy 2020 through 2025

## Priority Goals – Targeted Industry Sectors

### Targeted Industry Sector No. 5, *Vocational Trades and Construction*

**Goal No. 1:** Work with local educators (high school, junior colleges, etc.) to implement and enhance vocational skills training programs to grow local talent pools by 5 percent over the next five years (2024).

**Goal No. 2:** Establish thriving special trades programs in every city by increasing students and adults to increase graduation and job placement by 50 percent by 2021.

**Goal No. 3:** Develop vocational and construction training programs to support a 20 percent increase in the workforce by 2022.

**Goal No. 4:** Identify workforce need and partner with education facilities to train future workforce for the next five years.

### Targeted Industry Sector No. 6, *Wholesale Trade*

**Goal No. 1:** Identify added value diversified crops opportunities for framers in the region by December 2021 (tied to *Goal No. 2 for Agriculture*).

**Goal No. 2:** Each region to increase their utilization of industrial zoned property by 20 percent by providing the essential infrastructure to support new business across other targeted industry sectors by 2022.

**Goal No. 3:** Increase wholesale trade for mining upline and downline by 25 percent by December 2024.

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# Northeastern Nevada Regional Development Authority Comprehensive Economic Development Strategy 2020 through 2025

## Priority Goals – Selected Economic Development Capacity Building Areas

### Selected Economic Development Capacity Building Area No. 1, *Education and Training*

**Goal No. 1:** Combine all existing programs and fragmented programs in community into a solid and robust training program which is comprehensive covering school age through adults.

**Goal No. 2:** Develop vocational and construction training programs to support a 20 percent increase by 2022.

**Goal No. 3:** Identify highest demands for training needs for secondary tier industry (to support local needs) by 20 percent in two years.

**Goal No. 4:** Create mentoring, apprentices, accredited certificate programs for trades through Great Basin College, the University of Nevada, Reno with local satellites by 2021.

### Selected Economic Development Capacity Building Area No. 2, *Housing Development*

**Goal No. 1:** Conduct a regional study on housing shortages and housing development opportunities within 18 months.

**Goal No. 2:** Identify and develop incentives for builders of all income brackets up to \$50,000 by December 2020; develop regional assessment for housing needs to use as a marketing tool for developers in two years.

**Goal No. 3:** Development of multi-family housing for 300 families (units) by 2024.

**Goal No. 4:** Increase new home starts determined by identified need in each community; percentage to vary based on individual community.

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# Northeastern Nevada Regional Development Authority Comprehensive Economic Development Strategy 2020 through 2025

## Priority Goals – Selected Economic Development Capacity Building Areas

### **Selected Economic Development Capacity Building Area No. 3, *Marketing and Attraction***

**Goal No. 1:** Create an online marketing campaign highlighting economic opportunities of the region that will increase Northeastern Nevada Regional Development Authority website visits by 30 percent over the next two years.

**Goal No. 2:** Create additional guide for tourism and recreation working with the six county's visitor centers by December 2020; partner with national and international brands to promote rural Nevada "when rural thrives, America thrives".

**Goal No. 3:** Collaborate throughout the region to share resources, ideas, efforts, successes to coordinate activities and 'draw' in an effort to promote regional economic development by December 2020.

**Goal No. 4:** Create marketing campaign that highlights the region's cultural and recreational opportunities and events by 2021.

### **Selected Economic Development Capacity Building Area No. 4, *Technology Development***

**Goal No. 1:** Partner with Amazon and Google for broadband Internet connectivity to support and encourage Williams Telecommunication to provide access to rural communities by 2021.

**Goal No. 2:** Partners with Google Loon to improve Internet and connectivity and use as a model for national rural communities within five years.

**Goal No. 3:** To improve infrastructure of broadband availability throughout community which will essentially increase Internet speed and access by 20 percent annually over the next five years.

**Goal No. 4:** Develop two options to address broadband shortages in the next 12 months.

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# Northeastern Nevada Regional Development Authority Comprehensive Economic Development Strategy 2020 through 2025

## Priority Goals – Selected Economic Development Capacity Building Areas

### **Selected Economic Development Capacity Building Area No. 5, *Small Business, Entrepreneurship, Innovation***

**Goal No. 1:** To offer a tax incentive program/break to small businesses employing more than 30 employees, including the number of small businesses in our region by 30 percent by 2022.

**Goal No. 2:** Develop a competitive think tank regionally for small businesses by 2022.

**Goal No. 3:** Educate small business community on closing the economic gap to stop the goods and services leakage by 2021.

**Goal No. 4:** Educate residents to support local businesses, create a ‘shop small business Saturday’ event; partner with StartUpNV to grow rural entrepreneurship ecosystems by holding a rural pitch conference in May 2021.

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# 1.0 Executive Summary

This University Center for Economic Development technical report serves as the final five-year Comprehensive Economic Development Strategy for the Northeastern Nevada Regional Development Authority for 2020 through 2025. Over the course of six months, public-sector, private-sector and non-profit representatives completed the U.S. Department of Agriculture Rural Development's Stronger Economies Together strategic economic development curriculum that was used to develop the required elements of a Comprehensive Economic Development Strategy as defined in Title 13 of the U.S. Code of Federal Regulations.

Based upon a comprehensive assessment of various socio-demographic, economic, and industry and occupational sector conditions in Northeastern Nevada, participating public-sector, private-sector and non-profit representatives who participated in the various regional strategic economic development planning workshops identified nine specific socio-demographic and economic conditions and nine broader regional conditions that this new five-year Comprehensive Economic Development Strategy has been developed to address. The strategic economic development vision and the strategic economic development goals developed by participating representatives of the region's public-sector, private-sector and non-profit sector are designed as benchmarks to measure progress in addressing the following conditions:

## Socio-Demographic and Economic Conditions

- **Condition 1:** Median Household Income, Median Family Income, and Per Capita Income
- **Condition 2:** Civilian Unemployment Rate
- **Condition 3:** Percent of Population Living Below the Poverty Line
- **Condition 4:** Aging Population
- **Condition 5:** Median Family Income
- **Condition 6:** Decreasing Workforce
- **Condition 7:** Civilian Workforce
- **Condition 8:** Average Household Size
- **Condition 9:** Median Age and Total Population



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## Broader Regional Conditions

- **Condition 1:** Internet and Broadband Telecommunications
- **Condition 2:** Availability and Reliability of Natural Gas
- **Condition 3:** Beef (Ranching) Production
- **Condition 4:** Passive Income, Region vs. State and National
- **Condition 5:** Type and Direction of Population Growth
- **Condition 6:** Higher Average Household Income vs. National
- **Condition 8:** Gaps in the Region's Mining, Quarrying, and Oil and Gas Extraction Industry Sector
- **Condition 9:** Leakage in the Region's Retail Trade Industry Sector

While successful implementation of this five-year Comprehensive Economic Development Strategy will require the collaborative and combined efforts of various public-sector, private-sector and non-profit organizations, agencies, firms and representatives, the Northeastern Nevada Regional Development Authority will serve as the Comprehensive Economic Development Strategy Committee. The Northeastern Nevada Regional Development Authority will be responsible for the annual evaluation and required reporting of progress made in achieving the stated strategic economic development vision, strategic economic development goals, and in addressing the individual conditions outlined in this Comprehensive Economic Development Strategy for the Northeastern Nevada Regional Development Authority for 2020 through 2025. Due to significant decreases in regional unemployment rates and significant increases in median household income, median family income, and per capita (mean) income, this Comprehensive Economic Development Strategy will focus on addressing various special needs as outlined in the above stated conditions and throughout this University Center for Economic Development technical report.

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## 2.0 Introduction

### Overview

What is strategy? According to John E. Gamble, Margaret A. Peteraf, and Arthur A. Thompson, in their 2015 book, *Essentials of Strategic Management: The Quest for Competitive Advantage*, “A strategy is a way of describing **how** you are going to get things done. It is less specific than an action plan (which tells the who-what-when); instead, it tries to broadly answer the question, ‘How do we get there from here?’ Do we want to take the train? Fly? Walk?” In short, a strategic plan provides an organization with a fundamental affirmation of the organization’s core values, strategic mission, and strategic vision while outlining the goals, objectives, and implementation measures the organization will attempt to achieve and implement over the strategic planning horizon.

Typically, a strategic plan includes three basic elements. First, the strategic plan is a recognition of the existing barriers an organization faces and the resources the organization has at its disposal to achieve strategic objectives. Second, the strategic plan is generally tied to an overall vision, mission, and a set of clearly defined objectives. And, third, the strategic plan provides direction to the organization for the organization’s future planned initiatives focusing on providing information, enhancing support, removing barriers, and providing resources to different parts of the organization and key stakeholders who have an interest in the achievement of the strategic plan.

When evaluating and developing a strategic plan, five basic questions must be answered, including:

- Does the strategic plan give overall direction to the organization? The strategic plan should point out the overall path without dictating a particular narrow approach.
- Does the strategic plan realistically fit available resources with identified opportunities? The strategic plan should take advantage of current resources and assets while embracing new opportunities for growth and success.
- Does the strategic plan minimize existing and future resistance and barriers the organization currently confronts and may have to address in the future? The strategic plan should keep in mind that opposition and resistance to implementation of the strategic plan is inevitable. Good strategic plans should attract allies and deter opponents.
- Does the strategic plan reach those that may be affected, positively and negatively, by implementing the strategic plan? The strategic plan should connect the intervention with those who it should benefit while minimizing potential negative impacts to those impacted by the plan.

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- Does the strategic plan advance the strategic mission of the organization? The strategy should make a difference on the mission of the organization while enabling the organization to achieve stated goals and objectives.

Unlike strategic plans for private sector firms, a Comprehensive Economic Development Strategy, as outlined in Title 13 Part 303 of the U.S. Code of Federal Regulations, must focus on how a public-sector economic development organization and authority will bring together the public and private sectors through the creation of an economic roadmap designed to diversify and strengthen regional and local economies. The inherent public-sector nature of the Comprehensive Economic Development Strategy requires consideration of both economic and community development goals and objectives in order to support and facilitate an environment of growth, investment, and job creation.

This Comprehensive Economic Development Strategy for the Northeastern Nevada Regional Development Authority, covering the five years between 2020 and 2025, was developed as part of a larger initiative to develop a new five-year Comprehensive Economic Development Strategy for the northeastern Nevada region through the development of new individual Comprehensive Economic Development Strategies for Elko County (including the individual communities of the City of Carlin, the City of Elko, the City of Wells, the City of West Wendover, and the communities of Jackpot and Spring Creek), Eureka County, Lander County, and White Pine County. Development of the Comprehensive Economic Development Strategy for the Northeastern Nevada Regional Development Authority and the member counties of Elko County, Eureka County, Lander County, and White Pine County, began in July 2019 with a series of local community and county-level workshops followed by a second round of local community and county-level workshops held in August 2019 and September 2019.

While development of the regional Comprehensive Economic Development Strategy for the Northeastern Nevada Regional Development Authority and for the individual communities and counties of Elko County, Eureka County, and Lander County was completed by faculty from the College of Business at the University of Nevada, Reno, staff from the Nevada Governor's Office of Economic Development and the U.S. Department of Agriculture Rural Development were primarily responsible for the development of the Comprehensive Economic Development Strategy for White Pine County.

- Round 1 Local Community Workshops:
  - July 15, 2019 and July 16, 2019: Battle Mountain, Nevada (Lander County)
  - July 18, 2019: Eureka, Nevada (Eureka County)
  - July 22, 2019 and July 23, 2019: Carlin, Nevada (Elko County)
  - July 24, 2019 and July 25, 2019: Elko, Nevada (Elko County)
  - July 26, 2019 and July 27, 2019: West Wendover, Nevada (Elko County)
- Round 2 Local Community Workshops:

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- August 12, 2019 and August 13, 2019: Battle Mountain, Nevada (Lander County)
  - August 15, 2019: Eureka, Nevada (Eureka County)
  - August 19, 2019 and August 20, 2019: Carlin, Nevada (Elko County)
  - August 21, 2019 and August 22, 2019: Elko, Nevada (Elko County)
  - September 5, 2019 and September 6, 2019: West Wendover, Nevada (Elko County)

Each of these local community and county-level workshops were facilitated by faculty from the College of Business, part of the University of Nevada, Reno. Approximately 200 community, county, municipal, private-sector and non-profit representatives attended and participated in these various local community and county-level workshops. The first round of local community workshops focused on evaluating current local community and economic development efforts, completing a series of community and economic assessments, and developing a draft strategic vision statement, a draft set of strategic economic development goals and objectives, and a draft implementation plan for Elko County (and the specific communities of Carlin, Elko, Jackpot, Spring Creek, Wells, and West Wendover), Eureka County, and Lander County.

The second round of local community workshops focused on completing additional community and economic assessments and revising and finalizing the draft strategic vision statement, draft set of strategic economic development goals and objectives, and the draft implementation plan developed during the first round of local community workshops. Workshop participants also were asked to expand upon the draft implementation plan developed during the first round of community workshops by identifying priority projects tied to the individual economic goals and objectives first developed during the first community workshops and revised during the second community workshops.

Upon completion of the first and second rounds of local community workshops, faculty from the College of Business at the University of Nevada, Reno developed and facilitated three separate regional workshops. The first regional workshop was held on October 3, 2019 and October 4, 2019 in Elko, Nevada, the second regional workshop was held on October 17, 2019 in Winnemucca, Nevada, and the third regional workshop was held on November 14, 2019 in Ely, Nevada. Nearly 200 different representatives from the Northeastern Nevada Regional Development Authority and from the public-sector, private-sector, and non-profit sector from each of the five member counties of the Northeastern Nevada Regional Development Authority (Elko County, Eureka County, Humboldt County, Lander County, and White Pine County) participated in these three separate regional workshops. It should be noted that Pershing County officially joined the Northeastern Nevada Regional Development Authority on January 1, 2020, after development of the local community and county-level Comprehensive Economic Development Strategy documents and after the Comprehensive Economic Development Strategy for the Northeastern Nevada Regional Development Authority had begun.

In 2018, Humboldt County completed a comprehensive economic and community analysis resulting in the development of a series of specific economic development objectives for the county as a well as a set of recommended projects and initiatives. The Humboldt Development Authority serves as the City of Winnemucca's and Humboldt County's economic development

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agency as a formal partnership of public and private entities and individuals with the stated mission of identifying and developing “...economic improvement opportunities, provide recommendations concerning economic development and improvement to the government bodies of the City of Winnemucca and Humboldt County, and to assist in the attraction, expansion, and growth of businesses that is compatible with the interests and concerns of the residents of Winnemucca and Humboldt County.” The Humboldt Development Authority implements this mission as a part of the Northeastern Nevada Regional Development Authority.

The stated vision of the Humboldt Development Authority is:

*Our vision for Humboldt County is captured in the ‘Shared Abundance’ scenario for the future. While mining, agriculture, and tourism are still the important backbone of the economy, they are now part of a diverse economy that is complemented by other industries such as specialist manufacturing, value added resources, logistic services, and renewable energy. This diversification has reduced exposure to the ‘boom and bust’ nature of commodity cycles. The region has become known for its ability to apply creative entrepreneurial solutions and capitalizes on challenges and new opportunities.*

*Winnemucca and surrounding areas have pulled together in a cohesive way to create a vibrant and responsive regional community. A diversified economy has allowed for greater community prosperity, and has reduced the gap between the rich and poor. There is an expanded sense of community and Winnemucca has transitioned into a cooperative adaptable community that is shaping its own future. It is an inviting community that has high levels of active participation, good community infrastructure and a healthy culture and spirit. This makes the community attractive to young people and professionals who see a future for themselves in Humboldt County.*

The stated economic development goals of the Humboldt Development Authority area:

- Ensure adequate infrastructure to support existing and future business.
- Diversify the local economy to maintain and improve the economic health of Humboldt County.
- Identify and pursue opportunities to develop additional public and private partnerships that enhance tourism and economic development.

As part of this new five-year Comprehensive Economic Development Strategy for the Northeastern Nevada Regional Development Authority, the Northeastern Nevada Regional Development Authority has and will continue to provide support to the Humboldt Development Authority, and to the other member counties of Elko County, Eureka County, Lander County, and White Pine County, and Pershing County as of January 1, 2020, in further implementing community-based and community or county-level strategic economic development goals and objectives. The strategic economic development goals and objectives and identified priority projects for Elko County (including the City of Carlin, City of Elko, City of Wells, and City of West Wendover and the communities of Jackpot and Spring Creek), Eureka County, and Lander

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County are found in the companion University Center for Economic Development technical reports submitted to the U.S. Economic Development Administration in 2020 as part of the development of a new five-year Comprehensive Economic Development Strategy for the Northeastern Nevada Regional Development Authority. The strategic economic development goals and objectives and identified priority projects for White Pine County are found in a companion Comprehensive Economic Development Strategy developed by representatives from the Nevada Governor's Office of Economic Development and the U.S. Department of Agriculture Rural Development and submitted to the U.S. Economic Development Administration along with this University Center for Economic Development technical report.

The Pershing County Economic Development Authority was initially developed as a partnership between the City of Lovelock and Pershing County with the stated mission of helping to "...maintain and grow a vibrant economic base by developing and implementing programs that invigorate growth thereby increasing the number of local jobs and expanding the tax base of Pershing County. The Pershing County Economic Development Authority serves as a liaison between new companies, existing companies, landowners, site selectors, utility companies, government entities and all Pershing County communities." As the addition of Pershing County to the Northeastern Nevada Regional Development Authority is relatively new, representatives from Pershing County did not have an opportunity to participate in the regional strategic economic development workshops facilitated by University Center for Economic Development faculty on October 3, 2019 and October 4, 2019 in Elko, Nevada, on October 17, 2019 in Winnemucca, Nevada, and on November 14, 2019 in Ely, Nevada. The Northeastern Nevada Regional Development Authority, at the time of publication of this University Center for Economic Development technical report, is still developing the formal relationship between Pershing County and the Northeastern Nevada Regional Development Authority. Subsequent annual evaluations and updates to this Comprehensive Economic Development Strategy for the Northeastern Nevada Regional Development Authority for 2020 through 2025 will include participation from both public-sector and private-sector representatives.

The first regional strategic economic development planning workshop, held on October 3, 2019 and October 4, 2019 in Elko, Nevada, included a general overview and evaluation of various aspects of the northeastern Nevada economy and the preliminary development of a draft strategic vision statement and set of strategic economic development goals for the Northeastern Nevada Regional Development Authority. The second regional workshop, held on October 17, 2019 in Winnemucca, Nevada, included an opportunity for workshop participants to further evaluate and revise the draft strategic vision statement and set of strategic economic development goals for the Northeastern Nevada Regional Development Authority and the identification of specific target industry sectors and priority projects for the region for the next five years. The third regional workshop, held on November 14, 2019 in Ely, Nevada, included the development of a comprehensive implementation plan for the specific goals and objectives, for the target industry sectors, and for the priority projects for the region developed in the previous workshops.

Each of the various community and county-level workshops and each of the three regional workshops facilitated by faculty and staff from the University Center for Economic Development employed the use of the Stronger Economies Together (SET) curriculum developed by the U.S. Department of Agriculture Rural Development, Purdue University Center for Regional

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Development, and the Southern Regional Development Center. The Stronger Economies Together strategic economic development planning curriculum is designed to enable communities and counties in, primarily rural, America to work together in developing and implementing an economic development blueprint for their multi-county region that strategically builds on the current and emerging economic strengths of that region. The Stronger Economies Together strategic economic development planning curriculum is divided into eight separate modules:

- Module 1, Launching SET and Building a Strong Regional Team
- Module 2, Exploring Your Region's Demographics
- Module 3, Identifying the Region's Comparative Advantage
- Module 4, Exploring Potential Regional Strategies
- Module 5, Defining Your Regional Vision and Goals
- Module 6, Discovering Assets and Barriers
- Module 7, Planning for Success
- Module 8, Measuring for Success

This University Center for Economic Development technical report presents the results from each of the three regional strategic economic development planning workshops (held October 3, 2019 and October 4, 2019, October 17, 2019, and on November 14, 2019) and contains the required elements of the new five-year Comprehensive Economic Development Strategy for the Northeastern Nevada Regional Development Authority for 2020 through 2025. A number of the various elements found in this five-year 2020 Comprehensive Economic Development Strategy for the Northeastern Nevada Regional Development Authority are included in the five-year Comprehensive Economic Development Strategy documents for the various member counties. Unless otherwise indicated, the Northeastern Nevada Regional Development Authority will serve as the Comprehensive Economic Development Strategy Committee for the purposes of implementation and annual evaluation of the 2020 Comprehensive Economic Development Strategy for the Northeastern Nevada Regional Development Authority.

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## 3.0 State Law and Federal Considerations

This section presents a general overview of relevant state law and federal considerations as it pertains to the development, implementation and administration of a new five-year Comprehensive Economic Development Strategy for the Northeastern Nevada Regional Development Authority.

### 3.1 State Law and Regional Considerations

Nevada Revised Statute, Chapter 278 *Planning and Zoning*, in Section 02521 Legislative Intent, paragraph one states, “The Legislature recognizes the need for innovative strategies of planning and development that: (a) address the anticipated needs and demands of continued urbanization and corresponding need to protect environmentally sensitive areas; and (b) will allow the development of less populous regions of this State if such regions: (1) seek increased economic development; and (2) have sufficient resources of land and water to accommodate development in a manner that is environmentally sound.”

Authority to create and adopt this Comprehensive Economic Development Strategy is found in Nevada Revised Statute, Chapter 278 Planning and Zoning, Section 160 Elements of Master Plan. NRS 278.160 lists the eight individual elements required in a master plan, including:

- A Conservation Element
- A Historic Preservation Element
- A Housing Element
- A Land Use Element
- A Public Facilities and Services Element
- A Recreation and Open Space Element
- A Safety Element
- A Transportation Element

Although no economic development element is required as part of NRS 278.160, paragraph two in NRS 278.160 states, “The commission may prepare and adopt, as part of the master plan, other and additional plans and reports dealing with such other elements as may in its judgment relate to the physical development of the city, county or region, and nothing contained in NRS 278.010 to 278.630, inclusive, prohibits the preparation and adoption of any such element as part of the master plan.” Although this Comprehensive Economic Development Strategy is not a required element of any community’s individual master plan, the various counties, municipalities, and individual communities within northeastern Nevada have prepared their own strategic economic development plans or formal Comprehensive Economic Development Strategies in order to consolidate and codify a growing body of policy concerning the economic and fiscal viability of the region.



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The Nevada Governor’s Office of Economic Development was created during the 2011 Legislative Session of the Nevada State Legislature and is codified in Nevada Revised Statute Chapter 231 *Economic Development, Tourism and Cultural Affairs*. The Governor’s Office of Economic Development was created in response to the Great Recession and the need to consolidate, coordinate and reorganize the various statewide economic development efforts and initiatives in Nevada. The mission of the Governor’s Office of Economic Development is to create high-quality jobs in Nevada and its vision is to create a vibrant, innovative, and sustainable economy with high-paying jobs for Nevadans. The objectives of the Governor’s Office of Economic Development, established in the state’s first state-wide economic development plan created in 2012, *Moving Nevada Forward: A Plan for Excellence in Economic Development 2012-2014*, are to establish a cohesive economic development operating system in the state, to increase opportunity through local education and workforce development, to catalyze innovation in core and emerging industries, to advance targeted sectors and opportunities, and to expand global engagement.

The Northeastern Nevada Regional Development Authority, a regional development authority created as an extension of the Nevada Governor’s Office of Economic Development, was originally created in 2012 with just Elko County and later expanded in 2014 and 2016 to include Eureka County, Humboldt County, Lander County, and White Pine County. The Northeastern Nevada Regional Development Authority was later expanded in 2020 to include Pershing County. The organizational mission of the Northeastern Nevada Regional Development Authority is to encourage and coordinate the continual, diversified development and economic growth of the Northeastern Nevada region and all of its entities. Comprised of both public and private sector members, the organizational vision of the Northeastern Nevada Regional Development Authority is to ensure the economic stability of the northeastern Nevada region by assisting member counties and cities in their efforts to enhance their respective and regional economic base. In partnership with its various public and private sector members, the Northeastern Nevada Regional Development Authority works to promote the region, recruit new industries, and to empower existing businesses.

## **3.2 Federal Considerations**

This Northeastern Nevada Regional Development Authority Comprehensive Economic Development Strategy for 2020 through 2025 is also designed to meet the requirements of a Comprehensive Economic Development Strategy (CEDS) document as outlined in Title 13 (Business Credit and Analysis), Part 303 (Planning Investments and Comprehensive Economic Development Strategies) of the U.S. Department of Commerce, U.S. Economic Development Administration (EDA). Authority for Title 13 Part 303 stems from 42 U.S.C. 3143, 42 U.S.C. 3162, 42 U.S.C. 3174, 42 U.S.C. 3211, and U.S. Department of Commerce Organization Order 10-4.

According to Title 13, Part 303, Section 303.1 (Purpose and Scope):

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“The purpose of EDA Planning Investments is to provide support to Planning Organizations for the development, implementation, revision or replacement of Comprehensive Economic Development Strategies, and for related short-term Planning Investments and State plans designed to create and retain higher-skill, higher-wage jobs, particularly for the unemployed and underemployed in the nation’s most economically distressed Regions. EDA’s Planning Investments support partnerships within District Organizations, Indian Tribes, community development corporations, non-profit regional planning organizations and other Eligible Recipients. Planning activities supported by these Investments must be part of a continuous process involving the active participation of Private Sector Representatives, public officials and private citizens, and include:

- (a) Analyzing local economies;
- (b) Defining economic development goals;
- (c) Determining Project opportunities; and
- (d) Formulating and implementing an economic development program that includes systemic efforts to reduce unemployment and increase incomes.”

According to Title 13, Part 303, Section 303.7 (Requirements for Comprehensive Economic Development Strategies):

“CEDS are designed to bring together the public and private sectors in the creation of an economic roadmap to diversify and strengthen regional economies. The CEDS should analyze the regional economy and serve as a guide for establishing regional goals and objectives, developing and implementing a regional plan of action, and identifying investment priorities and funding sources.”

According to Title 13, Part 303, Section 303.7 (Requirements for Comprehensive Economic Development Strategies), a proper Comprehensive Economic Development Strategy must include the following ten technical requirements:

- Background of the region’s economic development situation.
- Economic and community development problems and opportunities.
- Regional goals and objectives.
- Community and private sector participation.
- Suggested projects and jobs created.
- Identifying and prioritizing vital projects.
- Regional economic clusters.
- A plan of action.
- Performance measures.
- Methodology for tying the CEDS to with any existing state plan.

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The remaining sections of this University Center for Economic Development technical report provides the content for each of these ten technical requirements and comprise the Comprehensive Economic Development Strategy for the Northeastern Nevada Regional Development Authority for 2020 through 2025.

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## 4.0 Overview of Current Economic Development Efforts

This section presents an overview of the results from Stronger Economies Together Module 1, *Launching Stronger Economies Together and Building a Strong Regional Team*, and parts of Module 2, *Exploring Your Region's Economic and Demographic Foundation*, completed by workshop participants who participated in the first regional strategic economic development planning workshop held on October 3, 2019 and October 4, 2019 in Elko, Nevada for northeastern Nevada. Elements of Stronger Economies Together Module 1 and Module 2 were reviewed during the second regional strategic economic development planning workshop held on October 17, 2019 in Winnemucca, Nevada.

As no current Comprehensive Economic Development Strategy for the Northeastern Nevada Regional Development Authority existed, no evaluation of a past or current regional Comprehensive Economic Development Strategy could be completed. The evaluation of past economic development efforts, including the evaluation of existing community and county-level Comprehensive Economic Development Strategy documents largely completed at a community or county level, are summarized and evaluated in the various accompanying documents referenced in Section 2.0 of this University Center for Economic Development technical report. Existing regional economic development efforts are evaluated in this section by identifying and evaluating existing regional real estate and land reuse strategies, tech-transfer and technology-based strategies, small business and entrepreneurial strategies, neighborhood and community development strategies, and various workforce and job training development strategies. Workshop participants were also asked to identify existing and develop new business creation, attraction, retention, and expansion strategies for the northeastern Nevada region.

### 4.1 Developing a Regional Economic Development Network

During the first regional strategic economic development planning workshop held on October 3, 2019 and October 4, 2019 in Elko, Nevada, workshop participants, using Stronger Economies Together Module 1, *Launching Stronger Economies Together and Building a Strong Regional Team*, identified various industry and interest area individuals, organizations, and private sector firms already engaged in various economic development efforts throughout Northeastern Nevada. These individuals, organizations, and private sector firms were sorted into six specific areas of economic development, including: (1) Real Estate and Land Reuse Strategies, (2) Tech-Transfer and Technology-Based Strategies, (3) Economic Development and Marketing and Attraction Strategies, (4) Small Business and Entrepreneurial Strategies, (5) Neighborhood and Community Development Strategies, and (6) Workforce and Job Training Development Strategies. Taken together, each of this six specific areas of economic development form a larger comprehensive economic development strategy designed to encourage new business creation and business attraction and encourage existing business retention and expansion.

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#### 4.1.a Real Estate and Land Reuse Strategies

Real estate and land reuse strategies typically include brand new development on a vacant parcel of land, the redevelopment of previously occupied parcels, and/or the reuse of previously occupied buildings. In many ways, real estate and land reuse-based economic development are central to the overall practice of economic development. Workshop participants identified the following individuals, organizations, and private sector firms already engaged in real estate and land reuse strategies operating throughout northeastern Nevada:

- Various City Councils within Northeastern Nevada
- Private Developers
- Various County Commissions within Northeastern Nevada
- U.S. Bureau of Land Management
- Existing Redevelopment Agencies (operating in Elko County and White Pine County)
- Northeastern Nevada Regional Development Authority
- Realtor's Association
- University of Nevada Cooperative Extension (University of Nevada, Reno and State of Nevada)
- Private Construction Companies
- City of Wells
- Bottari Realty
- Existing and Active Main Street Programs
- U.S. Forest Service
- Coldwell Banker
- Various Planning Commissions and Planning Boards within Northeastern Nevada
- Various City/Municipal Governments and County Governments within Northeastern Nevada
- Operating Industrial Parks within Northeastern Nevada
- Elko County Association of Realtors
- U.S. Army Core of Engineers
- Nevada Rural Water Association
- Humboldt WA
- Various Ranching and Farming Operations within Northeastern Nevada
- Southern Nevada Water Authority

These individuals, organizations, and private sector entities directly engage in a number of real estate and land reuse strategies throughout northeastern Nevada and represent significant contributions to the region's various strategic economic development efforts. Workshop participants noted that each of these individuals, organizations, and private sector entities will be critical in further developing and directly implementing the various elements of the new Comprehensive Economic Development Strategy for the Northeastern Nevada Regional Development Authority. Future efforts of the Northeastern Nevada Regional Development Authority, according to workshop participants, should focus on providing information regarding technical and financial assistance to communities or private-sector interests involved in real estate and land reuse economic development efforts.

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#### 4.1.b Tech-Transfer and Technology-Based Strategies

Economic restructuring, the prosperity of technology driven economies, and the importance of knowledge to economic transitions have made science and technology key components of economic growth. Technology-led development has become a critical concern of entire regions and individual communities as competitive regions and communities develop, transfer, commercialize, and deploy advanced technologies as part of their wider economic development strategy. Workshop participants identified the following individuals, organizations, and private sector firms already engaged in tech-transfer and technology-based strategies operating throughout northeastern Nevada:

- Nevada Governor’s Office of Science, Innovation and Technology
- Nevada System of Higher Education (including the Desert Research Institute, Great Basin College, and the University of Nevada, Reno)
- U.S. Department of Agriculture
- Health Resources and Services Administration
- Nevada Governor’s Office of Economic Development
- City of Wells (GeoT)
- Various Ranching and Farming Operations within Northeastern Nevada
- Vitality/NRH
- Future Farmers of America Program (various high schools and school districts within Northeastern Nevada)
- University of Utah
- Southwest Gas
- NV Energy
- Broadband and Telecommunication Companies
- Various Mining and Natural Resource Extraction Companies Operating within Northeastern Nevada

These individuals, organizations, and private sector entities directly engage in a number of tech-transfer and technology-based economic development strategies throughout northeastern Nevada and represent significant contributions to the region’s various strategic economic development efforts. Workshop participants noted that these individuals, organizations, and private sector entities will all be critical in further developing and directly implementing various tech-transfer and technology-based elements of this new Comprehensive Economic Development Strategy for the Northeastern Nevada Regional Development Authority.

#### 4.1.c Economic Development Marketing and Attraction Strategies

Economic development marketing and attraction has always been an important economic development tool and strategy sub-set. Economic development marketing and attraction strategies have been used to help attract, retain, and expand businesses, help improve a region’s and community’s image both inside and outside the region and community, and help to promote key policies and programs designed to support other economic development strategies and initiatives. Workshop participants identified the following individuals, organizations, and

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private sector firms already engaged in different economic development and marketing and attraction strategies operating throughout northeastern Nevada:

- Various Chambers of Commerce Operating within Northeastern Nevada
- Various Community Service Groups (i.e. Rotary, Soroptimist, etc.) Operating within Northeastern Nevada
- Existing Downtown Business Associations Operating within Northeastern Nevada
- Northeastern Nevada Regional Development Authority
- U.S. Department of Agriculture
- Nevada Governor's Office of Economic Development
- Nevada System of Higher Education (including Great Basin College, University of Nevada Cooperative Extension, and the University of Nevada, Reno)
- University Center for Economic Development (University of Nevada, Reno)
- Various City/Municipal and County Governments (active websites)
- Existing and Active Main Street Programs
- Private Consultants and Consulting Groups
- Nevada Department of Transportation
- Various Convention, Tourism, and Visitor Authorities Operating within Northeastern Nevada
- Existing Local Economic Development Authorities (i.e. Humboldt Development Authority, Lander Economic Development Authority, etc.)

These individuals, organizations, and private sector entities directly engage in a number of economic development marketing and attraction strategies designed to promote individual communities and the entire region to both internal and external audiences. Workshop participants noted that these individuals, organizations, and private sector entities will be critical in further developing and directly implementing the various economic development marketing and attraction elements of this new five-year Comprehensive Economic Development Strategy for the Northeastern Nevada Regional Development Authority.

#### 4.1.d Small Business and Entrepreneurial Strategies

Small businesses and entrepreneurial start-ups play a fundamental role throughout a region and within local communities and their economies. These small businesses and entrepreneurial start-ups help to improve a region's or local community's overall competitiveness, help in diversifying the overall economic base, and stimulate other economic development efforts and overall levels of economic activity. Small businesses and entrepreneurial start-ups serve as **employers**, creating new jobs and playing a significant in hiring workers and people entering the labor market for the first time, as **tax revenue generators**, broadening and diversifying an existing tax base, **economic supporters**, buying and supplying local products and services, **property owners and renters**, purchasing or leasing space from local property owners and filling vacant storefronts, and as **providers of economic stability**, owned and operated by individuals who have a personal stake in the region's and community's overall economic health. Workshop participants identified the following individuals, organizations, and private sector firms already engaged in different small business and entrepreneurial-based strategies operating throughout northeastern Nevada:

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- Regional Small Business Development Office (Partnership between Great Basin College and the Nevada Small Business Development Center)
  - Nevada Department of Business and Industry
  - Ozmen Center for Entrepreneurship (University of Nevada, Reno)
  - Various Chambers of Commerce Operating within Northeastern Nevada
  - Various City/Municipal and County Governments
  - Existing and Active Main Street Programs
  - Nevada State Bank
  - U.S. Department of Agriculture
  - Existing Revolving Loan Funds within Northeastern Nevada
  - Cattleman's Association
  - Farm Bureau, Ag Production/Credit
  - The Real World Design Challenge (RWDC), Nevada
  - U.S. Small Business Administration, State Office
  - Northeastern Nevada Regional Development Authority

These individuals, organizations, and private sector entities directly engage in a number of small business and entrepreneurial-based economic development strategies throughout northeastern Nevada. These individuals, organizations, and private sector entities provide assistance in the development of individual business plans, aid with funding including applying for loans, technical assistance with the training of managing staff and employees, assistance in marketing and product development, and other key functions. Workshop participants noted that these individuals, organizations, and private sector entities will be critical in further developing and directly implementing the various small business development and entrepreneurial-based elements of this new Comprehensive Economic Development Strategy for the Northeastern Nevada Regional Development Authority.

#### 4.1.e Neighborhood and Community Development Strategies

Neighborhood and community development strategies typically focus on the economic and community aspects of specific neighborhoods, including a community's retail sector, market potential, employment opportunities, and available labor force. Job creation, business attraction, and existing business retention are fundamental elements that comprise a region's or community's overall neighborhood and community development strategy. Workshop participants identified the following individuals, organizations, and private sector firms already engaged in different neighborhood and community development strategies operating throughout northeastern Nevada:

- Various City Councils and City/Municipal Governments (Carlin, Elko, Ely, Eureka, Wells, West Wendover, etc.)
- Nevada Gold Mines
- Various Non-Profit Organizations Operating within Northeastern Nevada
- U.S. Department of Agriculture
- State of Nevada (and various individual departments, divisions and agencies)
- Existing Downtown Business Associations Operating within Northeastern Nevada



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- Private Sector Developers (provision of infrastructure)
  - Various City and County Advisory Boards
  - Spring Creek Association (and other similar organizations and associations)
  - Existing Youth Sports Leagues
  - Individual Community Schools and School Districts within Northeastern Nevada
  - City Council Members and County Commissioners (region wide)
  - Existing Regulatory Agencies (local, state, and federal)
  - Various Public-Sector, Non-Profit, and Private-Sector Healthcare and Mental Healthcare Providers
  - Nevada System of Higher Education (Great Basin College, University of Nevada, Reno Outreach)
  - AmeriCorps
  - Various Convention, Tourism, and Visitor Authorities Operating within Northeastern Nevada
  - Various City/Municipal Governments and County Governments within Northeastern Nevada
  - Boys & Girls Club
  - Resource Centers
  - PTO
  - Next Money
  - Short-Term Housing Providers
  - PACE
  - Medical Clinics and Hospitals Operating within Northeastern Nevada; MedX; Northeastern Nevada Regional Hospital (Elko, Nevada); Battle Mountain General Hospital (Battle Mountain, Nevada)
  - Vitality Center
  - Rural Nevada Development Center
  - Elko County Association of Realtors
  - Nevada Chapter of the American Planning Association
  - U.S. Department of Housing and Urban Development, Nevada Rural Housing Authority
  - Veteran Groups and Associations
  - Various Utility Companies Operating within Northeastern Nevada

These individuals, organizations, and private sector entities directly engage in a number of neighborhood and community development strategies throughout Northeastern Nevada. While the Northeastern Nevada Regional Development Authority does not directly engage in neighborhood and community development oriented strategies, workshop participants noted that each of these individuals, organizations, and private sector entities will be critical in further developing and, at least indirectly implementing, the various elements of the new Comprehensive Economic Development Strategy for the Northeastern Nevada Regional Development Authority. Successful community and economic development efforts at the neighborhood and community level can translate into successful implementation of this larger regional Comprehensive Economic Development Strategy for the Northeastern Nevada Regional Development Authority.

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#### 4.1.f Workforce and Job Training Strategies

Increased global competition and technological change in services and manufacturing have resulted in a new mix of specialized workforce requirements. Workforce and job training economic development strategies seek to bridge the gap or gaps that exist between demand and supply for trained employees through the general improvement of the workforce's existing skill sets and to improve the basic skill sets of entry-level workers. Workshop participants identified the following individuals, organizations, and private sector firms already engaged in various workforce and job training strategies operating throughout northeastern Nevada:

- JOIN, Inc.
- Various City/Municipal and County Governments
- Nevada System of Higher Education (Great Basin College, University of Nevada, Reno, Western Nevada College)
- Ruby Mountain Resource Center (Developmentally Disabled)
- Various Private Sector Entities and Firms with Active Job Training Programs
- Various Non-Profit Organizations Operating within Northeastern Nevada
- Nevada Job Connect
- Communities in Schools (CIS), Jobs for America's Graduates (JAG)
- Individual Community Schools and School Districts within Northeastern Nevada
- Various Mining and Natural Resource Extraction Companies Operating within Northeastern Nevada
- Nevada State Office of Rural Health
- Nevada Department of Employment, Training and Rehabilitation
- Medical Clinics and Hospitals Operating within Northeastern Nevada; MedX; Northeastern Nevada Regional Hospital (Elko, Nevada); Battle Mountain General Hospital (Battle Mountain, Nevada)
- Various Public-Sector, Non-Profit, and Private-Sector Healthcare and Mental Healthcare Providers
- U.S. Department of Veterans Affairs
- AmeriCorps
- Various Chambers of Commerce Operating within Northeastern Nevada
- Mentorship Programs (WREC, Cities, Counties, Mines)
- On-the-Job-Training Provided by Private Sector Firms
- Various Extracurricular Groups and Activities (FFA, FBLA, Boys & Girls Club)
- Various Summer Programs, Skills Classes, Hobby and Recreational Clubs and Groups

These individuals, organizations, and private sector entities directly engage in a number of workforce and job training economic development strategies throughout northeastern Nevada. Again, while the Northeastern Nevada Regional Development Authority does not directly engage in neighborhood and community development oriented strategies, workshop participants noted that these individuals, organizations, and private sector entities will be critical in further developing and, at least indirectly implementing, the various elements of this new five-year Comprehensive Economic Development Strategy for the Northeastern Nevada Regional

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Development Authority by focusing on the continual improvement of the region's existing and future workforce.

## **4.2 Identifying Existing Creation, Attraction, Retention, and Expansion Economic Development Efforts**

Economic development efforts can be organized into four general areas, including: (1) creation activities, (2) attraction activities, (3) retention activities, and (4) expansion activities. Creation economic development activities includes the strategies and initiatives designed to encourage the formation of new private sector firms within a community and throughout a region. Attraction economic development activities includes the efforts to recruit existing businesses and industries to a specific community or region. Retention economic development activities include the strategies for maintaining and strengthening the community's and region's existing firms and expansion economic development activities include the various initiatives to encourage the growth of existing firms already operating within a community and region. Workshop participants who participated in the first regional strategic economic development planning workshop held on October 3, 2019 and October 4, 2019 in Elko, Nevada, using Stronger Economies Together Module 2, *Exploring Your Region's Economic and Demographic Foundation*, were asked to identify the existing creation, attraction, retention, and expansion strategies and initiatives already being led by various individuals, organizations, and private sector firms located and operating throughout northeastern Nevada.

### **4.2.a Existing Creation Economic Development Initiatives**

Workshop participants identified a number of individuals, organizations, and private sector firms and a number of specific economic development initiatives focused on business creation activities, including:

- Various Non-Profit Organizations Operating within Northeastern Nevada
- U.S. Department of Agriculture
- Nevada System of Higher Education (Great Basin College, University of Nevada, Reno)
- Various Private Sector Entities
- Private Developers
- Various City Councils and City/Municipal Governments and Various County Commissions and County Governments
- Existing Downtown Business Associations Operating within Northeastern Nevada
- Private Construction Companies
- Nevada Governor's Office of Economic Development
- Various Community Service Groups (i.e. Rotary, Soroptimist, etc.) Operating within Northeastern Nevada
- Northeastern Nevada Regional Development Authority
- Regional Small Business Development Office (Partnership between Great Basin College and the Nevada Small Business Development Center)
- AmeriCorps

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- Existing Regulatory Agencies (local, state, and federal)
  - Nevada State Office of Rural Health
  - Various Mining and Natural Resource Extraction Companies Operating within Northeastern Nevada
  - Nevada Department of Employment, Training and Rehabilitation
  - Various Public-Sector, Non-Profit, and Private-Sector Healthcare and Mental Healthcare Providers
  - U.S. Health Resources and Services Administration
  - Spring Creak Association and Other Similar Community Associations
  - University of Utah
  - Individual Community Schools and School Districts within Northeastern Nevada
  - Existing Vocational Training, Mentorship, and Internship Programs
  - Various Agricultural Organizations Operating within Northeastern Nevada
  - Short-Term Housing Providers
  - Provision of Financing and Financial Assistance Programs aimed at Business Creation and Start-Up
  - Government Grant Programs (local, state, and federal)
  - Various Extracurricular Groups and Activities (FFA, FBLA, Boys & Girls Club)
  - Existing Tech-Transfer Programs
  - Various Chambers of Commerce Operating within Northeastern Nevada
  - JOIN, Inc.
  - Utilization of Existing Tax Incentive Programs (local and state, Opportunity Zones via U.S. Federal Government)
  - Existing Community-Level and County-Led Broadband and Telecommunication Development Projects
  - Rural Nevada Development Corporation
  - Operating Industrial Parks within Northeastern Nevada
  - Various Utility Companies Operating within Northeastern Nevada

While workshop participants noted a number of individuals, organizations, and private sector firms already engaged in a number of current business creation activities and initiatives, workshop participants further noted a general lack of coordination of these activities and initiatives across the entire region. Furthermore, workshop participants generally agreed that the various existing business creation activities and initiatives tend to lack a specific industry sector or occupational sector focus. As part of the new five-year Comprehensive Economic Development Strategy for the northeastern Nevada region, workshop participants further agreed that the Northeastern Nevada Regional Development Authority could assist in providing this industry sector or occupational sector focus by helping coordinate these various business creation activities across organizational and community lines.

#### 4.2.b Existing Attraction Economic Development Initiatives

Workshop participants identified a number of individuals, organizations, and private sector firms and a number of specific economic development initiatives focused on business attraction activities, including:

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- Various Chambers of Commerce Operating within Northeastern Nevada
  - Northeastern Nevada Regional Development Authority
  - Existing Downtown Business Associations Operating within Northeastern Nevada
  - Individual Community Schools and School Districts within Northeastern Nevada
  - Various Private Sector Entities
  - Private Developers
  - Various City Councils and City/Municipal Governments and Various County Commissions and County Governments
  - Elko Convention and Visitors Authority and Various Convention, Tourism, and Visitor Authorities Operating within Northeastern Nevada
  - Nevada System of Higher Education (Desert Research Institute, Great Basin College, University of Nevada, Reno)
  - U.S. Department of Agriculture
  - Nevada Governor's Office of Economic Development
  - Various Community Service Groups (i.e. Rotary, Soroptimist, etc.) Operating within Northeastern Nevada
  - Regional Small Business Development Office (Partnership between Great Basin College and the Nevada Small Business Development Center)
  - Existing Youth Sports Leagues
  - Various Mining and Natural Resource Extraction Companies Operating within Northeastern Nevada
  - Nevada Department of Employment, Training and Rehabilitation
  - Various Public-Sector, Non-Profit, and Private-Sector Healthcare and Mental Healthcare Providers
  - Various Community Service Groups (i.e. Rotary, Soroptimist, etc.) Operating within Northeastern Nevada
  - Spring Creek Association
  - Existing Community Resource Providers
  - Various Extracurricular Groups and Activities (FFA, FBLA, Boys & Girls Club)
  - Nevada State Bank
  - U.S. Department of Housing and Urban Development, Nevada Rural Housing Authority
  - Utilization of Existing Tax Incentive Programs (local and state, Opportunity Zones via U.S. Federal Government)
  - Broadband and Telecommunication Development Programs and Projects
  - Various Ranching and Farming Operations within Northeastern Nevada
  - U.S. Small Business Administration, State Office
  - Elko County Association of Realtors
  - U.S. Army Core of Engineers
  - Operating Industrial Parks within Northeastern Nevada
  - Existing Local Economic Development Authorities (i.e. Humboldt Development Authority, Lander Economic Development Authority, etc.)
  - Various Churches and Faith-Based Organizations Operating within Northeastern Nevada
  - Various Utility Companies Operating within Northeastern Nevada
  - Nevada Governor's Office of Science, Innovation and Technology

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- Various Existing Workforce Development and Job Training Programs

Workshop participants noted that the various individuals, organizations, and private sector firms already engaged in a number of current business attraction activities and initiatives, and the various existing business attraction activities and initiatives themselves, are largely focused on regular improvement of the region's overall quality of life and the quality of life of each individual community located within northeastern Nevada. Improvement in the region's overall quality of life and the improvement in the quality of life for each individual community located within northeastern Nevada should remain, as generally agreed to by workshop participants, a local or county-level effort. However, workshop participants noted that the Northeastern Nevada Regional Development Authority, as part of its new five-year Comprehensive Economic Development Strategy, should assume a stronger coordinating role across the individual member counties. The Northeastern Nevada Regional Development Authority can also serve an educational role by identifying possible threats to existing quality of life levels and help communities respond by providing or identifying sources of possible financial and technical assistance.

#### 4.2.c Existing Retention Economic Development Initiatives

Workshop participants identified a number of individuals, organizations, and private sector firms and a number of specific economic development initiatives focused on business retention activities and efforts, including:

- Various Non-Profit Organizations Operating within Northeastern Nevada
- Various Chambers of Commerce Operating within Northeastern Nevada
- Existing Downtown Business Associations Operating within Northeastern Nevada
- JOIN, Inc.
- Various Private Sector Entities
- Private Developers
- Various City Councils and City/Municipal Governments and Various County Commissions and County Governments
- Elko County Association of Realtors and other Realtor's Associations
- University of Nevada Cooperative Extension
- Nevada System of Higher Education (Desert Research Institute, Great Basin College, University of Nevada, Reno)
- Nevada Governor's Office of Economic Development
- U.S. Department of Veterans Affairs
- Various Community Service Groups (i.e. Rotary, Soroptimist, etc.) Operating within Northeastern Nevada
- Northeastern Nevada Regional Development Authority
- Regional Small Business Development Office (Partnership between Great Basin College and the Nevada Small Business Development Center)
- Existing Youth Sports Leagues
- Individual Community Schools and School Districts within Northeastern Nevada
- U.S. Department of Agriculture

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- Communities in Schools (CIS), Jobs for America’s Graduates (JAG)
  - Various Extracurricular Groups and Activities (FFA, FBLA, Boys & Girls Club)
  - PACE
  - Nevada State Office of Rural Health
  - Various Mining and Natural Resource Extraction Companies Operating within Northeastern Nevada
  - Nevada Department of Employment, Training and Rehabilitation
  - Various Public-Sector, Non-Profit, and Private-Sector Healthcare and Mental Healthcare Providers
  - Health Resources and Services Administration
  - Spring Creek Association
  - Private Consultants and Consulting Groups
  - Existing and Active Main Street Programs
  - Mentorship Programs (WREC, Cities, Counties, Mines)
  - Various Ranching and Farming Operations within Northeastern Nevada
  - Resource Centers
  - Utilization of Existing Tax Incentive Programs (local and state, Opportunity Zones via U.S. Federal Government)
  - Broadband and Telecommunication Companies
  - Existing Water Authorities (Provision and Regulation)
  - Nevada Governor’s Office of Science, Innovation and Technology
  - Rural Nevada Development Corporation
  - Various Churches and Faith-Based Organizations Operating within Northeastern Nevada
  - Various Utility Companies Operating within Northeastern Nevada
  - Various Existing Workforce Development and Job Training Programs

Similar to existing business attraction activities and initiatives, workshop participants noted that the various individuals, organizations, and private sector firms already engaged in a number of current business attraction activities and initiatives, and the various existing business retention activities and initiatives themselves, are largely focused on regular improvement of the region’s overall quality of life and the quality of life of each individual community located within northeastern Nevada. Improvement in the region’s overall quality of life and the improvement in the quality of life for each individual community located within northeastern Nevada should remain, as generally agreed to by workshop participants, a local or county-level effort.

However, workshop participants did note that the Northeastern Nevada Regional Development Authority, as part of its new five-year Comprehensive Economic Development Strategy, should assume a stronger coordinating role across the individual member counties. The Northeastern Nevada Regional Development Authority can also serve an educational role by identifying possible threats to existing quality of life levels and help communities respond by providing or identifying sources of possible financial and technical assistance. As part of the new five-year Comprehensive Economic Development Strategy, workshop participants further noted that the Northeastern Nevada Regional Development Authority should regularly reach out to existing businesses, either directly or through ongoing business surveys, attempt to identify existing businesses that may be considering leaving the region for other geographic areas and, more

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importantly, *why* the business is considering leaving the region and then help to identify specific actions that can be taken at the regional or community level to retain that existing business.

#### 4.2.d Existing Expansion Economic Development Initiatives

Workshop participants identified a number of individuals, organizations, and private sector firms and a number of specific economic development initiatives focused on business expansion activities and efforts, including:

- Various Chambers of Commerce Operating within Northeastern Nevada
- Existing Downtown Business Associations Operating within Northeastern Nevada
- U.S. Department of Agriculture
- JOIN, Inc.
- Various Private Sector Entities and Firms
- Private Sector Developers
- Various City Councils and City/Municipal Governments and Various County Commissions and County Governments
- Elko County Association of Realtors and other Realtor's Associations
- University of Nevada Cooperative Extension
- Nevada System of Higher Education (Desert Research Institute, Great Basin College, University of Nevada, Reno)
- Ozmen Center for Entrepreneurship (University of Nevada, Reno)
- Nevada Governor's Office of Economic Development
- Northeastern Nevada Regional Development Authority
- Regional Small Business Development Office (Partnership between Great Basin College and the Nevada Small Business Development Center)
- Nevada State Office of Rural Health
- AmeriCorps
- Existing Regulatory Agencies (local, state, and federal)
- Individual Community Schools and School Districts within Northeastern Nevada
- Various Mining and Natural Resource Extraction Companies Operating within Northeastern Nevada
- Nevada Department of Employment, Training and Rehabilitation
- Various Public-Sector, Non-Profit, and Private-Sector Healthcare and Mental Healthcare Providers
- Health Resources and Services Administration
- Various Community Service Groups (i.e. Rotary, Soroptimist, etc.) Operating within Northeastern Nevada
- Spring Creek Association
- Nevada State Bank
- Wells Rural Electric
- NV Energy
- Southwest Gas
- Short-Term Housing Providers



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- Nevada Department of Transportation
  - Utilization of Existing Tax Incentive Programs (local and state, Opportunity Zones via U.S. Federal Government)
  - Broadband and Telecommunication Companies
  - Various Ranching and Farming Operations within Northeastern Nevada
  - Operating Industrial Parks within Northeastern Nevada
  - Nevada Governor’s Office of Science, Innovation and Technology
  - Rural Nevada Development Corporation
  - CBED
  - U.S. Department of Housing and Urban Development, Nevada Rural Housing Authority

Workshop participants noted that individual firms operating throughout northeastern Nevada have, in recent years, experienced difficulty in acquiring the needed inputs of production that would allow their individual firm to expand existing operations. Specifically, workshop participants generally agreed that gaining access to additional skilled workers is a primary barrier that most firms throughout northeastern Nevada face in terms of expanding their existing operations. Individual firms also struggle with gaining access to new markets located outside northeastern Nevada or struggle to expand their existing operations while being dependent on existing marketing within northeastern Nevada. While a number of individuals, organizations, and private sector firms are already focused on business expansion and while a number of specific economic development initiatives focused on business expansion activities and efforts already exist within the area, workshop participants noted that the Northeastern Nevada Regional Development Authority should, as part of its new five-year Comprehensive Economic Development Strategy, focus on these primary barriers to business expansion. By addressing the barriers of a lack of additional skilled workers, failing to gain access to external markets, and by helping grow local regional markets, individual firms may be better able to expand their existing operations.

### **4.3 Identifying Possible New Creation, Attraction, Retention, and Expansion Economic Development Efforts**

In large group discussions, workshop participants who participated in the first regional strategic economic development planning workshop were asked to identify possible new creation, attraction, retention, and expansion strategies that should be incorporated into the development of a new five-year Comprehensive Economic Development Strategy for the Northeastern Nevada Regional Development Authority. While a number of these suggested new creation, attraction, retention, and expansion efforts are already being developed, additional investment spearheaded by the Northeastern Nevada Regional Development Authority will be needed.

#### **4.3.a New Creation Economic Development Initiatives**

Workshop participants identified six primary new business creation economic development initiatives that the Northeastern Nevada Regional Development Authority could potentially develop as part of its new five-year Comprehensive Economic Development. The first of these

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six new business creation economic development initiatives focuses on the development of new private-sector childcare services needed to support a growing population base. As new individuals and new families continue to move into the northeastern Nevada region, additional childcare services will be needed. While there is growing demand for childcare services and for new businesses that provide these services, the growth in childcare services in northeastern Nevada will also allow adults who are part of the region's civilian workforce to potentially pursue their own business creation and start-up efforts and help other firms grow through the further development of the region's workforce.

Second, workshop participants noted that there is considerable untapped potential to grow and expand the region's existing agricultural industry sector. Workshop participants noted that a considerable portion of the region's existing agricultural industry sector is dominated by historical agricultural production processes including the growing of hay and related products and ranching. The recent legalization of hemp and marijuana production and use in Nevada, for both recreational and medicinal use, represents a possible opportunity for various agricultural producers already operating throughout northeastern Nevada. Beyond production, workshop participants expressed interest in exploring the possibility of capturing more of the larger agricultural supply and value chain including, but not limited to, the production and use of hemp in finished goods and products as well as other parts of the larger agricultural supply chain and value chain more closely related to existing regional agricultural production. Developing regional meat processing capacity, food production processing capacity, and the development and utilization of existing and new technologies are a few ways that new businesses can be created within and around the region's existing agricultural industry sector. New production processes, including the use of hydro or aquaponics, coupled with the development and use of renewable energy, can help address the region's and state's larger food desert while creating new businesses and new employment opportunities in new and emerging industry sectors and sub-sectors.

Third, and similar to creating new businesses and new employment opportunities in the region's existing agricultural sector, workshop participants noted that there is also considerable untapped potential to grow and expand the region's existing mining and natural resource extraction industry sector on both the upstream (equipment and material suppliers, tools, vehicles, etc.) and downstream (processing of ore and use in the creation of finished or component products) supply chains of the various mining and natural resource extraction firms that already operate in northeastern Nevada. Individual states such as Colorado and Utah benefit from the lack of a more fully developed mining and natural resource extraction industry sector supply chain in Nevada. By aggressively supporting the development of new businesses within the region that can successfully supply the existing mining and natural resource extraction firm's upstream supply chain needs while also expanding upon the utilization of ore in finished or component products, new businesses and new employment opportunities can be created throughout the region. Workshop participants also noted that this approach can also help create new businesses in other related and non-related industry sectors such as construction and material moving.

Fourth, workshop participants noted a severe lack of individual firms and individual workers that can provide sufficient vocational services and skills (construction, machining, high-tech, etc.) to meet current levels of demand. Individual firms and workers from outside the region from either

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the Reno-Sparks Metropolitan Statistical Area, southern Idaho, and even Utah have attempted to fill this gap by providing these services and the necessary workforce. Workshop participants noted the need for significant investment in vocational education and training as a starting point for the development and creation of new businesses in various vocational sector areas. Fifth, workshop participants noted the rapidly growing need for additional healthcare providers that can provide a number of expanded medical services to the region's growing population. Primary care, mental healthcare services, trauma and emergency treatment services, pediatrics, and several other service areas make up just a few of the various healthcare areas that have experienced significant increases in overall demand. The development of training and certification programs in Certified Nursing, Registered Nursing, for Physician Assistants, and pharmacy is one area in which the Northeastern Nevada Regional Development Authority can support new business creation in the area of healthcare.

Sixth, and finally, workshop participants noted a growing demand for new broadband and telecommunication services as well as related businesses that can utilize this technology. For the Northeastern Nevada Regional Development Authority, continued advocacy with local, state, and federal elected representatives for improved broadband and telecommunication coverage can serve as a springboard for new business creation across several different industry sectors. A more rapid expansion of regional broadband and telecommunication coverage and infrastructure is also vital in launching other business attraction, business retention, and business expansion efforts at both the community or county level and the regional level.

#### 4.3.b New Attraction Economic Development Initiatives

The various new business attraction economic development initiatives largely focus on building upon the existing community or county level and regional assets and strengths already present including a strong mining and natural resource extraction industry sector, a strong agricultural industry sector, a strong tourism industry sector, and the many natural and human made resources found throughout northeastern Nevada. First, workshop participants strongly advocated for attracting new businesses to northeastern Nevada that can take advantage of the region's existing orientation toward natural resource-based tourism. Firms that can promote and provide an 'outdoor experience' for visitors, site tours, and provide a legitimate 'western' experience are the types of tourism and recreation firms that the Northeastern Nevada Regional Development Authority should aggressively attract.

Second, and building upon the area's already strong tourism and recreation industry sector, the Northeastern Nevada Regional Development Authority should aggressively attract firms that can capture various upstream and downstream elements of the tourism and recreation industry sector's supply chain and value chain. New retailers, tied to population growth centers and the region's overall growth in income, can provide additional consumption opportunities for tourists and visitors who visit and vacation in the region. Expanding the supply chain and value chain, to provide multi-day and multi-activity opportunities, such as hiking in the morning, golf in the afternoon, and dinner and shows in the evening, is another way in which new businesses can be attractively recruited to the region.

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Helping to serve and expand the region's existing mining and natural resource extraction industry sector and existing agricultural industry sector, the third way in which the Northeastern Nevada Regional Development Authority can attract new businesses to the region is by focusing on further developing the region's small, light and medium-scaled manufacturing base to supply various materials, supplies, tools, and equipment used by existing firms in both industry sectors. By working with existing educators and workforce training organizations operating throughout northeastern Nevada, the Northeastern Nevada Development Authority should focus on developing additional professional development, training, and certification programs that small, light and medium-scaled manufacturers will need as they relocate to the region. This area should also focus on promoting more hemp production within the region and the utilization of produced hemp in various processing and production methods in order to create end products for consumers both within and outside northeastern Nevada.

Fourth, workshop participants noted that the region could better take advantage of the existing transportation infrastructure that already exists throughout northeastern Nevada. The existence of a major national railroad network, U.S. Interstate 80, U.S. Highway 50, medium to small sized airports, underutilized industrial parks, and other related transportation infrastructure combined with the region's central geographic location to major urban and metropolitan markets makes northeastern Nevada an ideal location for firms that provide multimodal and intermodal logistical and distribution services. Fifth, and finally, workshop participants noted that the Northeastern Nevada Regional Development Authority, in partnership with the various public schools and school districts operating within northeastern Nevada, need to expand training and educational opportunities for educators and education professionals that work within the region. New firms that maybe recruited to relocate to northeastern Nevada will need access to a growing workforce and steady improvements to the region's overall public education sector will help attract new workers to the area.

While not directly addressed in any specific new strategic goal or objective of this new five-year Comprehensive Economic Development Strategy for the Northeastern Nevada Regional Development Authority, key regional stakeholders agreed that the region's existing passenger and freight railroad infrastructure assets will play a vital role in the successful development and implementation of new business creation and attraction economic development initiatives. Expansion of both freight and passenger rail along the U.S. Interstate 80 corridor and feeder communities will remain a key element for economic growth throughout the northeastern Nevada region. Because the northeastern Nevada region is relatively isolated from major metropolitan areas (for example, Salt Lake City, Utah and Sacramento, California) and the potential trade and commerce opportunities they offer. Any products produced or needed in the northeastern Nevada region must be transported a long distance which creates additional cost, time delays, and logistical challenges. The thousands of rail cars and semi-trucks that traverse the U.S. Interstate 80 corridor daily, presents numerous opportunities for transportation hubs to successfully diversify this region's local economies beyond historical dependence on the mining and natural resource extraction and agricultural industry and occupation sectors.

The various population centers located throughout northeastern Nevada also tend to be separated by long distances connected by various state and federal highway systems. Each population center has existing businesses and opportunities for potential new businesses that could

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potentially and greatly benefit through both additional stations and intermodal sites along the main Union Pacific railroad corridor or through expansion of Union Pacific tracks or even short line services. Intermodal sites with freight services could potential spur industrial development which is particularly desirable due to the extensive operations in the mining and natural resource extraction industry and occupation sector in northeastern Nevada. Such sites open the door for development not only to national and international firms, but to local and regional businesses.

Similarly, development around passenger stations tends to be diverse and can become concentrated areas of enormous economic activity for smaller cities and towns. Two connections should be prioritized as the need and benefits are significant for the continued growth and development of individual communities within northeastern Nevada and for the entire region. First, connection between Ely, Nevada and Shafter, Nevada should be considered within this new five-year Comprehensive Economic Development Strategy for the Northeastern Nevada Regional Development Authority. The rapid growth of diverse mining and large-scale agriculture operations could significantly benefit from added rail freight services. Upgrading the existing line to accommodate these emerging industries within White Pine County would likely enhance overall trade opportunities within the region and allow east-central Nevada, within northeastern Nevada, to more fully realize its full economic potential. Passenger services along the line could significantly impact the Ely, Nevada area which is already home to the largest active railroad museum in the United States (the Nevada Northern Railway), and a major tourist destination because of the existing Great Basin National Park. Ely, within White Pine County, is already a highway portal (located at the intersection of U.S. Highway 93 and U.S. Highway 50) in eastern Nevada, and a connection to the Union Pacific main east/west line would add vitality to the hub through both freight and passenger service. With no existing north/south rail connecting southern Nevada with northern Nevada rail lines, this connection would also open up central Nevada along the U.S. Highway 50 corridor to rail opportunities.

Second, connection between Wells, Nevada and Twin Falls, Idaho should also be considered within this new five-year Comprehensive Economic Development Strategy for the Northeastern Nevada Regional Development Authority. Currently connected only by U.S. Highway 93, this area is vastly underserved and in need of new passenger and freight rail services. A connection to the existing Union Pacific line in Twin Falls, Idaho to Wells, Nevada would open up Nevada to the entire United States northwestern and intermountain western market via Southern Idaho's Magic Valley. The ability to move passengers and freight directly from Nevada rather than traveling long distances through Sacramento, California or Salt Lake City, Utah would particularly benefit northeastern Nevada by attracting companies in those hubs to Nevada.

Additionally, the existing passenger stations in both Winnemucca, Nevada in Humboldt County and Elko, Nevada in Elko County should be enhanced with additional boarding and debarking stops. Amtrak currently provides limited service with one west bound and one east bound stop daily, although it has numerous trains daily traversing the state. A station stop in Battle Mountain, Nevada in Lander County is needed and could have potential enormous economic impact on the community which is located at the intersection of U.S. Interstate 80 and Nevada State Highway 305. Battle Mountain, Nevada, because of its geographic location along two important transportation corridors with both east-west and north-south connectivity, also

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provides connectivity to communities located along the U.S. Highway 50 corridor in the southern part of the northeastern Nevada region.

Congestion and safety also play a major role in the need for expanded passenger and freight rail services along the U.S. Interstate 80 corridor. Trucking has dramatically increased throughout the entire northeastern Nevada region and, along with it, wear and tear on the region's network of surface roadway systems. Passenger car travel along the U.S. Interstate 80 corridor is often overwhelmed by the sheer numbers of trucks, especially with two and three trailers. Head-on collisions between passenger cars attempting to pass semi-trucks (often multiple) are not uncommon along U.S. Highway 93 and U.S. Highway 95. Exacerbated by a climate that can produce heavy snow and ice up to nine months of the year, accidents are common and can often result in a complete shutdown of the region's entire highway network. Expanded passenger and freight rail services and infrastructure will greatly contribute to the safety and welfare of travelers and the region's local population and will be a vital element of the region's new business creation and retention economic development initiative portfolio.

#### 4.3.c New Retention Economic Development Initiatives

Workshop participants identified five specific new initiatives that the Northeastern Nevada Regional Development Authority, either by itself or in partnership with other individuals, organizations, or private sector firms, could develop in order to retain existing businesses already operating throughout northeastern Nevada. First, workshop participants expressed a strong desire to focus on the development of a series of new technical and financial assistance programs aimed at helping various existing 'mom and pop retailers' that make up a substantial portion of the region's overall retail trade industry sector. Workshop participants noted that these various 'mom and pop retailers' could benefit from assistance in marketing their goods and services to wider markets located outside northeastern Nevada as a way of ensuring that their business does not close. Second, and related to various 'mom and pop retailers', is the development of new technical and financial assistance programs to existing firms that provide either direct or indirect tourism and recreation services. Again, workshop participants noted that these various tourism and recreation service-based firms could directly benefit from assistance in marketing their goods and services to wider markets located outside northeastern Nevada as a way of ensuring that their business does not close.

The third and fourth new retention-oriented economic development initiatives are targeted toward supporting the region's existing two largest industry sectors, including the mining and natural resource extraction industry sector and the agricultural industry sector. Third, the consolidation of several existing mining operations into a single corporate identity, Nevada Gold Mines, has created duplication in the supply chain for the newly established Nevada Gold Mines. As Nevada Gold Mines continues to streamline its inherited supply chain, existing support firms that provide equipment, materials, supplies, tools and other goods and services to the existing mining and natural resource extraction activities within the region will need assistance in finding new customers and new markets outside northeastern Nevada. Fourth, and in partnership with various entities such as University of Nevada Cooperative Extension and Great Basin College, workshop participants suggested that the Northeastern Nevada Regional Development Authority

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should focus on new business retention economic development initiatives aimed at supporting existing agricultural producers already operating throughout northeastern Nevada.

Fifth, and finally, workshop participants noted that several firms have either relocated outside the region, closed their operations, or are considering leaving the region or closing their operations due to a lack of reliable broadband and telecommunication service. In order to access markets outside northeastern Nevada, many firms throughout the region are considering utilizing online sales as a way of both maintaining and expanding their existing operations. As previously mentioned, workshop participants strongly supported the idea that the Northeastern Nevada Regional Development Authority, as part of its new five-year Comprehensive Economic Development Strategy and in partnership with various individuals, organizations, and private sector firms, should focus on continued advocacy with local, state, and federal elected representatives for improved broadband and telecommunication coverage that can serve as a springboard for existing business retention and expansion across several different industry sectors.

#### 4.3.d New Expansion Economic Development Initiatives

Similar to the various new creation, attraction, and retention economic development initiatives already outlined above, many of the new expansion economic development initiatives for the Northeastern Nevada Regional Development Authority's new five-year Comprehensive Economic Development Strategy focuses on expanding elements of the region's existing primary industry sectors. First, workshop participants suggested expanding the operations of firms already operating throughout northeastern Nevada that already provide goods and services to firms within the region's existing mining and natural resource extraction industry sector. This effort can be accomplished by assisting existing firms find new customers and new markets outside northeastern Nevada but by retaining the firm's production base in northeastern Nevada and then exporting finished products, materials, supplies, tools and services to those new customers and new markets.

Second, workshop participants suggested expanding the operations of farms and ranchers already part of the region's agricultural industry sector by helping support the development of new and alternative crops and expanded production, processing, transportation, and logistical services. New public policies and regulatory structures at the local level, state level, and federal level may be required and the Northeastern Nevada Regional Development Authority can assist with the needed advocacy for these policy and regulatory changes. The Northeastern Nevada Regional Development Authority can also assist, in partnership with others, in identifying, developing, and securing new technologies needed to support these various expansion efforts.

Education, as a 'catch-all', is the third area in which the Northeastern Nevada Regional Development Authority can expand its business expansion efforts. In partnership with various other individuals, organizations, and even private-sector firms that provide various educational services, the Northeastern Nevada Regional Development Authority should focus on expanding the educational offerings already present within the region. New and expanded satellite campuses, the development of distancing learning programs through the use of technology, development of new teacher education programs, and a comprehensive expansion of existing

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continuing education and certification and recertification programs should be part of the Northeastern Nevada Regional Development Authority's effort to grow and improve the area's existing workforce in order to help individual firms in northeastern Nevada expand their operations.

Fourth, and finally, is a 'catch-all' of various service based business expansion initiatives that workshop participants expressed general support for. As northeastern Nevada's population continues to grow, there is growing demand for new and expanded healthcare services, new and expanded vocational trade services and workers, and new and expanded financial services. Specialty care, short-term and long-term care, laboratories and pharmacies, emergency and trauma services, and general practitioner services are in high demand but existing providers are currently unable to meet these growing levels of demand. Expansion of existing healthcare infrastructure, including telehealth services, transportation of materials and patients, and other healthcare related services are also in need of greater expansion to meet growing demand. General banking, automated teller services, and loans for business creation as well as various other consumer and developer or commercial financial services are also generally underserved throughout northeastern Nevada. Within the vocational trades sector, there is growing demand in a variety of areas including construction and other related vocational services. As part of its new five-year Comprehensive Economic Development Strategy, the Northeastern Nevada Regional Development Authority should focus its business expansion efforts on helping grow businesses that already provide these products and services in order to meet continued growth in demand.



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## 5.0 Analysis: Existing Regional Conditions

This section presents a comprehensive overview of the results from Stronger Economies Together Module 2, *Exploring Your Region's Demographics*, presented to participants of the first regional strategic economic development planning workshop held on October 3, 2019 and October 4, 2019 in Elko, Nevada. The results of several community identity, environmental assessment, and community economic development capacity exercises facilitated by University Center for Economic Development faculty and staff during both the first regional strategic economic development planning workshop and the second strategic economic development planning workshop, held on October 17, 2019 in Winnemucca, Nevada, are also presented in this section.

### 5.1 Socio-Demographic and Economic Trends for the Northeastern Nevada Regional Development Authority

Ten separate socio-demographic and economic categories were examined by participants of the first regional strategic economic development planning workshop held on October 3, 2019 and October 4, 2019 in Elko, Nevada. These categories include total population, median age, total number of households, average household size, median household income, median family income, per capita (mean) income, percent of total population living below the poverty line, civilian workforce, and civilian unemployment rate.

#### 5.1.a Total Population

Table 5.1 presents the change in total population for each county within the Northeastern Nevada Regional Development Authority region, the state of Nevada, and for the United States between 2013 and 2017. Total population for the entire Northeastern Nevada Regional Development Authority region is highlighted.

Between 2013 and 2017, northeastern Nevada's total population, including the total populations of Elko County, Eureka County, Humboldt County, Lander County, and White Pine County, increased from an estimated 84,494 total individuals in 2013 to an estimated 86,938 total individuals in 2017, a net increase of 2,444 total individuals or 2.9 percent. Elko County's total population increased from an estimated 50,023 total individuals in 2013 to an estimated 52,377 total individuals in 2017, a net increase of 2,354 total individuals or 4.7 percent. Elko County's growth in total population largely drove total population growth for all of northeastern Nevada between 2013 and 2017.

Eureka County's total population decreased from an estimated 1,804 total individuals in 2013 to an estimated 1,728 total individuals in 2017, a net decrease of 76 total individuals or -4.2 percent. In Humboldt County, the county's total population increased from an estimated 16,800

total individuals in 2013 to an estimated 17,088 total individuals in 2017, a net increase of 288 total individuals or 1.7 percent. Between 2013 and 2017, Lander County's total population increased slightly, increasing from an estimated 5,844 total individuals in 2013 to an estimated 5,887 total individuals in 2017, a net increase of just 43 total individuals or 0.7 percent. In White Pine County, the county's total population decreased from an estimated 10,023 total individuals in 2013 to an estimated 9,858 total individuals in 2017, a slight net decrease of 165 total individuals or -1.6%.

<b>Table 5.1 – Total Population Communities within the Northeastern Nevada Regional Development Authority 2013 and 2017</b>				
<b>Community</b>	<b>2013</b>	<b>2017</b>	<b>2013-2017 Actual Change</b>	<b>2013-2017 Percent Change</b>
<b>Elko County</b>	<b>50,023</b>	<b>52,377</b>	<b>2,354</b>	<b>4.7%</b>
Carlin	2,701	2,361	-340	-12.6%
Elko	37,670	40,311	2,641	7.0%
Wells	1,986	2,208	222	11.2%
West Wendover	4,442	4,449	7	0.2%
<b>Eureka County</b>	<b>1,804</b>	<b>1,728</b>	<b>-76</b>	<b>-4.2%</b>
Eureka	1,340	1,230	-110	-8.2%
<b>Humboldt County</b>	<b>16,800</b>	<b>17,088</b>	<b>288</b>	<b>1.7%</b>
Winnemucca	13,028	14,243	1,215	9.3%
<b>Lander County</b>	<b>5,844</b>	<b>5,887</b>	<b>43</b>	<b>0.7%</b>
Austin	580	411	-169	-29.1%
Battle Mountain	5,264	5,476	212	4.0%
<b>White Pine County</b>	<b>10,023</b>	<b>9,858</b>	<b>-165</b>	<b>-1.6%</b>
Ely	5,718	5,876	158	2.8%
<b>Northeastern Nevada Regional Development Authority - REGION</b>	<b>84,494</b>	<b>86,938</b>	<b>2,444</b>	<b>2.9%</b>
<b>State of Nevada</b>	<b>2,730,066</b>	<b>2,887,725</b>	<b>157,659</b>	<b>5.8%</b>
<b>United States</b>	<b>311,536,594</b>	<b>321,004,407</b>	<b>9,467,813</b>	<b>3.0%</b>

Source: U.S. Census Bureau; American Community Survey, 5-Year Estimates; 2013 and 2017

Comparatively, the total population for the state of Nevada increased significantly between 2013 and 2017, increasing from an estimated 2.7 million total individuals in 2013 to an estimated 2.9 million total individuals in 2017, a net increase of 157,659 total individuals or 5.8 percent. Nationwide, the total population for the entire United States grew at a comparable percentage rate to northeastern Nevada, increasing from an estimated 311.5 million total individuals in 2013 to an estimated 321.0 million total individuals in 2017, a net increase of approximately 9.5 million total individuals 3.0 percent.

### 5.1.b Median Age

Table 5.2 presents the change in the median age for each county within the Northeastern Nevada Regional Development Authority region, the state of Nevada, and for the United States between 2013 and 2017. The estimated (average) median age for the entire Northeastern Nevada Regional Development Authority region for both 2013 and 2017 is highlighted.

<b>Table 5.2 – Median Age Communities within the Northeastern Nevada Regional Development Authority 2013 and 2017</b>				
<b>Community</b>	<b>2013</b>	<b>2017</b>	<b>2013-2017 Actual Change</b>	<b>2013-2017 Percent Change</b>
<b>Elko County</b>	<b>33.3</b>	<b>34.1</b>	<b>0.8</b>	<b>2.4%</b>
Carlin	35.2	38.1	2.9	8.2%
Elko	33.1	34.2	1.1	3.3%
Wells	39.5	35.1	-4.4	-11.1%
West Wendover	26.1	29.2	3.1	11.9%
<b>Eureka County</b>	<b>38.3</b>	<b>47.3</b>	<b>9.0</b>	<b>23.5%</b>
Eureka	34.9	46.5	11.6	33.2%
<b>Humboldt County</b>	<b>35.7</b>	<b>35.6</b>	<b>-0.1</b>	<b>-0.3%</b>
Winnemucca	34.0	33.9	-0.1	-0.3%
<b>Lander County</b>	<b>37.3</b>	<b>37.8</b>	<b>0.5</b>	<b>1.3%</b>
Austin	34.2	53.9	19.7	57.6%
Battle Mountain	37.8	36.8	-1.0	-2.6%
<b>White Pine County</b>	<b>40.9</b>	<b>39.4</b>	<b>-1.5</b>	<b>-3.7%</b>
Ely	43.1	39.1	-4.0	-9.3%
<b>Northeastern Nevada Regional Development Authority - REGION</b>	<b>37.1 (Average)</b>	<b>38.8 (Average)</b>	<b>1.7</b>	<b>4.7%</b>
<b>State of Nevada</b>	<b>36.6</b>	<b>37.7</b>	<b>1.1</b>	<b>3.0%</b>
<b>United States</b>	<b>37.3</b>	<b>37.8</b>	<b>0.5</b>	<b>1.3%</b>

Source: U.S. Census Bureau; American Community Survey, 5-Year Estimates; 2013 and 2017

Between 2013 and 2017, the estimated (average) median age for northeastern Nevada, taking into account changes in the median age in Elko County, Eureka County, Humboldt County, Lander County, and White Pine County, increased from an estimated 37.1 years of age in 2013 to an estimated 38.8 years of age in 2017, a net increase of 1.7 years or 4.7 percent. The increase in the estimated (average) median age for northeastern Nevada was largely driven by the increase in the median age for Elko County, Eureka County, and Lander County between 2013 and 2017. In Elko County, the median age increased from an estimated 33.3 years of age in 2013 to an estimated 34.1 years of age in 2017, a net increase of 0.8 years or 2.4 percent.

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In Eureka County, the median age increase from an estimated 38.3 years of age in 2013 to an estimated 47.3 years of age in 2017, a significant net increase of 9.0 years or 23.5 percent. The net increase and percentage increase in median age in Eureka County was the largest increase in median age throughout all of northeastern Nevada between 2013 and 2017. Between 2013 and 2017, the median age in Humboldt County slightly decreased, decreasing from an estimated 35.7 years of age in 2013 to an estimated 35.6 years of age, a net decrease of just 0.1 years or -0.3 percent. In Lander County, the median age increased slightly from an estimated 37.3 years of age in 2013 to an estimated 37.8 years of age in 2017, a net increase of just 0.5 years or 1.3 percent. In White Pine County, the median age decreased from an estimated 40.9 years of age in 2013 to an estimated 39.4 years of age in 2017, a net decrease of 1.5 years or -3.7 percent.

Both statewide and nationwide, the median age for the state of Nevada and for the United States increased but with net increases and percentage increases less than the net increase and percentage increase in the estimated (average) median age for all of northeastern Nevada between 2013 and 2017. Between 2013 and 2017, the median age for the entire state of Nevada increased from an estimated 36.6 years of age in 2013 to an estimated 37.7 years of age in 2017, a net increase of 1.7 years or 3.0 percent. Nationwide, the median age for the entire United States increased from an estimated 37.3 years of age in 2013 to an estimated 37.8 years of age in 2017, a net increase of just 0.5 years or 1.3 percent.

#### 5.1.c Total Number of Households

Table 5.3 presents the change in the total number of households present for each county within the Northeastern Nevada Regional Development Authority region, the state of Nevada, and for the United States between 2013 and 2017. The total number of households present for the entire Northeastern Nevada Regional Development Authority region for both 2013 and 2017 is highlighted.

Between 2013 and 2017, the total number of households located in northeastern Nevada, taking into account changes in the total number of households in Elko County, Eureka County, Humboldt County, Lander County, and White Pine County, increased from an estimated 29,696 total households in 2013 to an estimated 30,103 total households in 2017, a net increase of 407 total households or 1.4 percent. Much of the growth in the total number households located in northeastern Nevada was driven by the growth in the total number of households present in Elko County, Eureka County, and Lander County between 2013 and 2017. The declines in the number of total households located in Humboldt County and White Pine County between 2013 and 2017 were largely significant. Between 2013 and 2017, the total number of households in Elko County increased from an estimated 17,599 total households in 2013 to an estimated 17,882 total households in 2017, a net increase of 283 total households or 1.6 percent.

In Eureka County, the total number of households increased from an estimated 416 total households in 2013 to an estimated 434 total households in 2017, a net increase of 18 total households or 4.3 percent. Between 2013 and 2017, the total number households in Humboldt County slightly declined, declining from an estimated 6,314 total households in 2013 to an estimated 6,261 total households in 2017, a net decrease of just 53 total households or -0.8 percent. In Lander County, the total number of households increased from an estimated 2,010

total households in 2013 to an estimated 2,183 total households in 2017, a net increase of 173 total households or 8.6 percent. In White Pine County, the total number of households declined slightly between 2013 and 2017, decreasing from an estimated 3,357 total households in 2013 to an estimated 3,343 total households in 2017, a net decrease of just 14 total households or -0.4 percent.

<b>Table 5.3 – Total Number of Households Communities within the Northeastern Nevada Regional Development Authority 2013 and 2017</b>				
<b>Community</b>	<b>2013</b>	<b>2017</b>	<b>2013-2017 Actual Change</b>	<b>2013-2017 Percent Change</b>
<b>Elko County</b>	<b>17,599</b>	<b>17,882</b>	<b>283</b>	<b>1.6%</b>
Carlin	937	735	-202	-21.6%
Elko	13,287	13,886	599	4.5%
Wells	800	776	-24	-3.0%
West Wendover	1,362	1,361	-1	-0.1%
<b>Eureka County</b>	<b>416</b>	<b>434</b>	<b>18</b>	<b>4.3%</b>
Eureka	504	506	2	0.4%
<b>Humboldt County</b>	<b>6,314</b>	<b>6,261</b>	<b>-53</b>	<b>-0.8%</b>
Winnemucca	4,859	5,063	204	4.2%
<b>Lander County</b>	<b>2,010</b>	<b>2,183</b>	<b>173</b>	<b>8.6%</b>
Austin	207	228	21	10.1%
Battle Mountain	1,803	1,955	152	8.4%
<b>White Pine County</b>	<b>3,357</b>	<b>3,343</b>	<b>-14</b>	<b>-0.4%</b>
Ely	2,155	2,273	118	5.5%
<b>Northeastern Nevada Regional Development Authority - REGION</b>	<b>29,696</b>	<b>30,103</b>	<b>407</b>	<b>1.4%</b>
<b>State of Nevada</b>	<b>999,016</b>	<b>1,052,249</b>	<b>53,233</b>	<b>5.3%</b>
<b>United States</b>	<b>115,610,216</b>	<b>118,825,921</b>	<b>3,215,705</b>	<b>2.8%</b>

Source: U.S. Census Bureau; American Community Survey, 5-Year Estimates; 2013 and 2017

Comparatively, the increase in the total number of households statewide and nationwide grew at net increases and percentage increases measurably greater than the net increase and percent increase in total households throughout all of northeastern Nevada. Between 2013 and 2017, the total number of households statewide in the state of Nevada increased from an estimated 999,016 total households in 2013 to an estimated 1.1 million total households in 2017, a net increase of 53,233 total households or 5.3 percent. Nationwide, the total number of households in the United States increased from an estimated 115.6 million total households in 2013 to an estimated 118.8 million total households in 2017, a net increase of approximately 3.2 million total households or 2.8 percent.

#### 5.1.d Average Household Size

Table 5.4 presents the change in the average household size for households present within each county within the Northeastern Nevada Regional Development Authority region, the state of Nevada, and for the United States between 2013 and 2017. The estimated (average) average household size for the entire Northeastern Nevada Regional Development Authority region for both 2013 and 2017 is highlighted.

<b>Table 5.4 – Average Household Size Communities within the Northeastern Nevada Regional Development Authority 2013 and 2017</b>				
<b>Community</b>	<b>2013</b>	<b>2017</b>	<b>2013-2017 Actual Change</b>	<b>2013-2017 Percent Change</b>
<b>Elko County</b>	<b>2.80</b>	<b>2.88</b>	<b>0.08</b>	<b>2.9%</b>
Carlin	2.70	2.98	0.28	10.4%
Elko	2.81	2.87	0.06	2.1%
Wells	2.34	2.67	0.33	14.1%
West Wendover	3.26	3.27	0.01	0.3%
<b>Eureka County</b>	<b>3.39</b>	<b>2.96</b>	<b>-0.43</b>	<b>-12.7%</b>
Eureka	2.61	2.42	-0.19	-7.3%
<b>Humboldt County</b>	<b>2.63</b>	<b>2.69</b>	<b>0.06</b>	<b>2.3%</b>
Winnemucca	1.25	2.77	1.52	121.6%
<b>Lander County</b>	<b>2.87</b>	<b>2.67</b>	<b>-0.20</b>	<b>-7.0%</b>
Austin	2.78	1.79	-0.99	-35.6%
Battle Mountain	4.08	2.77	-1.31	-32.1%
<b>White Pine County</b>	<b>2.74</b>	<b>2.50</b>	<b>-0.24</b>	<b>-8.8%</b>
Ely	2.60	2.53	-0.07	-2.7%
<b>Northeastern Nevada Regional Development Authority - REGION</b>	<b>2.89 (Average)</b>	<b>2.74 (Average)</b>	<b>-0.15</b>	<b>-5.1%</b>
<b>State of Nevada</b>	<b>2.70</b>	<b>2.71</b>	<b>0.01</b>	<b>0.4%</b>
<b>United States</b>	<b>2.63</b>	<b>2.63</b>	<b>0.00</b>	<b>0.0%</b>

Source: U.S. Census Bureau; American Community Survey, 5-Year Estimates; 2013 and 2017

Between 2013 and 2017, the estimated (average) average household size for households located throughout northeastern Nevada, taking into account changes in the average household size for households in Elko County, Eureka County, Humboldt County, Lander County, and White Pine County, decreased, decreasing from an estimated average household size of 2.89 people per housing unit in 2013 to an estimated 2.71 people per housing unit in 2017, a net decrease of 0.15 people per housing unit or -5.1 percent. This decline in the region-wide average household size was largely driven by decreases in the average household size in Eureka County, Lander County, and White Pine County. In Elko County, the average household size increased from an

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estimated 2.80 people per household in 2013 to an estimated 2.88 people per household in 2017, a net increase of just 0.08 people per household or 2.9 percent.

In Eureka County, the average household size decreased from an estimated 3.39 people per household in 2013 to an estimated 2.96 people per household in 2017, a significant net decrease of 0.43 people per household or -12.7 percent. In Humboldt County, the average household size increased slightly, increasing from an estimated 2.63 people per household in 2013 to an estimated 2.69 people per household in 2017, a net increase of just 0.06 people per household or 2.3 percent. Between 2013 and 2017, the average household size of households in Lander County decreased, decreasing from an estimated 2.87 people per household in 2013 to an estimated 2.67 people per household in 2017, a net decrease of 0.20 people per household or -7.0 percent. In White Pine County, the average household size decreased from an estimated 2.74 people per household in 2013 to an estimated 2.50 people per household in 2017, a net decrease of 0.24 people per household or -8.8 percent.

Statewide, the average household size for all households across the state of Nevada increased slightly, increasing from an estimated 2.70 people per household in 2013 to an estimated 2.71 people per household in 2017, a net increase of just 0.01 people per household or 0.4 percent. Nationwide, the average household size for all households across the entire United States remained unchanged, with an average household size of 2.63 people per household in both 2013 and 2017.

#### 5.1.e Median Household Income

Table 5.5 presents the change in median household income for each county within the Northeastern Nevada Regional Development Authority region, the state of Nevada, and for the United States between 2013 and 2017. The estimated (average) median household income for the entire Northeastern Nevada Regional Development Authority region for both 2013 and 2017 is highlighted.

Between 2013 and 2017, the estimated (average) median household income for all of northeastern Nevada, taking into account changes in median household income in Elko County, Eureka County, Humboldt County, Lander County, and White Pine County, increased from an estimated \$63,134 in 2013 to an estimated \$70,577 in 2017, a significant net and percentage increase of \$7,443 or 11.8 percent. Between 2013 and 2017, median household income increased in all five counties in northeastern Nevada, including Elko County, Eureka County, Humboldt County, Lander County, and White Pine County. In Elko County, median household income increased from an estimated \$70,238 in 2013 to an estimated \$76,178 in 2017, a net increase of \$5,940 or 8.5 percent.

In Eureka County, median household income increased from an estimated \$64,632 in 2013 to an estimated \$67,159 in 2017, a net increase of \$2,527 or 3.9 percent and, in Humboldt County, median household income increased from an estimated \$59,472 in 2013 to an estimated \$69,324 in 2017, a significant net increase and percentage increase of \$9,852 or 16.6 percent. Between 2013 and 2017, median household income in Lander County increased from an estimated \$72,742 in 2013 to an estimated \$79,865 in 2017, a net increase of \$7,123 or 9.8 percent. In

White Pine County, median household income increased significantly between 2013 and 2017, increasing from an estimated \$48,586 in 2013 to an estimated \$60,358 in 2017, a net increase of \$11,772 or 24.2 percent.

<b>Table 5.5 – Median Household Income (2017 Inflation-Adjusted Dollars) Communities within the Northeastern Nevada Regional Development Authority 2013 and 2017</b>				
<b>Community</b>	<b>2013</b>	<b>2017</b>	<b>2013-2017 Actual Change</b>	<b>2013-2017 Percent Change</b>
<b>Elko County</b>	<b>\$70,238</b>	<b>\$76,178</b>	<b>\$5,940</b>	<b>8.5%</b>
Carlin	\$69,107	\$74,148	\$5,041	7.3%
Elko	\$75,989	\$85,530	\$9,541	12.6%
Wells	\$46,875	\$60,426	\$13,551	28.9%
West Wendover	\$37,740	\$48,429	\$10,689	28.3%
<b>Eureka County</b>	<b>\$64,632</b>	<b>\$67,159</b>	<b>\$2,527</b>	<b>3.9%</b>
Eureka	\$50,268	\$70,000	\$19,732	39.3%
<b>Humboldt County</b>	<b>\$59,472</b>	<b>\$69,324</b>	<b>\$9,852</b>	<b>16.6%</b>
Winnemucca	\$67,456	\$76,621	\$9,165	13.6%
<b>Lander County</b>	<b>\$72,742</b>	<b>\$79,865</b>	<b>\$7,123</b>	<b>9.8%</b>
Austin	\$43,809	\$45,570	\$1,761	4.0%
Battle Mountain	\$76,090	\$83,521	\$7,431	9.8%
<b>White Pine County</b>	<b>\$48,586</b>	<b>\$60,358</b>	<b>\$11,772</b>	<b>24.2%</b>
Ely	\$49,316	\$61,339	\$12,023	24.4%
<b>Northeastern Nevada Regional Development Authority - REGION</b>	<b>\$63,134 (Average)</b>	<b>\$70,577 (Average)</b>	<b>\$7,443</b>	<b>11.8%</b>
<b>State of Nevada</b>	<b>\$52,800</b>	<b>\$55,434</b>	<b>\$2,634</b>	<b>5.0%</b>
<b>United States</b>	<b>\$53,046</b>	<b>\$57,652</b>	<b>\$4,606</b>	<b>8.7%</b>

Source: U.S. Census Bureau; American Community Survey, 5-Year Estimates; 2013 and 2017

Median household income, both statewide and nationwide, increased at net rates and percentage rates significantly less than the net increase and percentage increase in median household income for all of northeastern Nevada between 2013 and 2017. Statewide, median household income for the entire state of Nevada increased from an estimated \$52,800 in 2013 to an estimated \$55,434 in 2017, a net increase of \$2,634 or 5.0 percent. Nationwide, median household income for the entire United States increased from an estimated \$53,046 in 2013 to an estimated \$57,652 in 2017, a net increase of \$4,606 or 8.7 percent.

#### 5.1.f Median Family Income

Table 5.6 presents the change in median family income for each county within the Northeastern Nevada Regional Development Authority region, the state of Nevada, and for the United States



between 2013 and 2017. The estimated (average) median family income for the entire Northeastern Nevada Regional Development Authority region for both 2013 and 2017 is highlighted.

Between 2013 and 2017, the estimated (average) median family income for all of northeastern Nevada, taking into account changes in median household income in Elko County, Eureka County, Humboldt County, Lander County, and White Pine County, increased from an estimated \$76,830 in 2013 to an estimated \$88,424 in 2017, a significant net increase of \$11,594 or 15.1 percent. Between 2013 and 2017, median family income increased in all five counties in northeastern Nevada, including Elko County, Eureka County, Humboldt County, Lander County, and White Pine County.

<b>Table 5.6 – Median Family Income (2017 Inflation-Adjusted Dollars) Communities within the Northeastern Nevada Regional Development Authority 2013 and 2017</b>				
<b>Community</b>	<b>2013</b>	<b>2017</b>	<b>2013-2017 Actual Change</b>	<b>2013-2017 Percent Change</b>
<b>Elko County</b>	<b>\$75,231</b>	<b>\$86,421</b>	<b>\$11,190</b>	<b>14.9%</b>
Carlin	\$75,046	\$75,060	\$14	0.0%
Elko	\$84,458	\$93,941	\$9,483	11.2%
Wells	\$55,500	\$66,111	\$10,611	19.1%
West Wendover	\$41,208	\$48,960	\$7,752	18.8%
<b>Eureka County</b>	<b>\$94,648</b>	<b>\$109,085</b>	<b>\$14,437</b>	<b>15.3%</b>
Eureka	\$64,853	\$113,869	\$49,016	75.6%
<b>Humboldt County</b>	<b>\$74,433</b>	<b>\$80,884</b>	<b>\$6,451</b>	<b>8.7%</b>
Winnemucca	\$86,287	\$85,691	-\$596	-0.7%
<b>Lander County</b>	<b>\$75,857</b>	<b>\$96,250</b>	<b>\$20,393</b>	<b>26.9%</b>
Austin	\$60,278	\$107,639	\$47,361	78.6%
Battle Mountain	\$80,313	\$94,265	\$13,952	17.4%
<b>White Pine County</b>	<b>\$63,982</b>	<b>\$69,481</b>	<b>\$5,499</b>	<b>8.6%</b>
Ely	\$63,459	\$75,074	\$11,615	18.3%
<b>Northeastern Nevada Regional Development Authority - REGION</b>	<b>\$76,830 (Average)</b>	<b>\$88,424 (Average)</b>	<b>\$11,594</b>	<b>15.1%</b>
<b>State of Nevada</b>	<b>\$61,359</b>	<b>\$65,469</b>	<b>\$4,110</b>	<b>6.7%</b>
<b>United States</b>	<b>\$64,719</b>	<b>\$70,850</b>	<b>\$6,131</b>	<b>9.5%</b>

Source: U.S. Census Bureau; American Community Survey, 5-Year Estimates; 2013 and 2017

In Elko County, median family income increased significantly between 2013 and 2017, increasing from an estimated \$75,231 in 2013 to an estimated \$86,421 in 2017, a net increase of \$11,190 or 14.9 percent. In Eureka County, median family income also increased significantly, increasing from an estimated \$94,648 in 2013 to an estimated \$109,085 in 2017, a net increase of

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\$14,437 or 15.3 percent. In Humboldt County, median family income increased from an estimated \$74,433 in 2013 to an estimated \$80,884 in 2017, a net increase of \$6,451 or 8.7 percent and, in Lander County, median family income increased significantly, increasing from an estimated \$75,857 in 2013 to an estimated \$96,250 in 2017, a net increase of \$20,393 or 26.9 percent. Between 2013 and 2017, median family income in White Pine County increased from an estimated \$63,982 in 2013 to an estimated \$69,481 in 2017, a net increase of \$5,499 or 8.6%.

Comparatively, median family income for the entire state of Nevada and for the entire United States increased at net rates and percentage rates measurably less than the net increase and percentage increase in median family income for all of northeastern Nevada. Statewide, median family income for the entire state of Nevada increased from an estimated \$61,359 in 2013 to an estimated \$65,469 in 2017, a net increase of \$4,110 or 6.7 percent. Nationwide, median family income increased from an estimated \$64,719 in 2013 to an estimated \$70,850 in 2017, a net increase of \$6,131 or 9.5 percent.

#### 5.1.g Per Capita (Mean) Income

Table 5.7 presents the change in per capita income for each county within the Northeastern Nevada Regional Development Authority region, the state of Nevada, and for the United States between 2013 and 2017. The estimated (average) per capita income for the entire Northeastern Nevada Regional Development Authority region for both 2013 and 2017 is highlighted.

Between 2013 and 2017, the estimated (average) per capita income for all of northeastern Nevada, taking into account changes in per capita income in Elko County, Eureka County, Humboldt County, Lander County, and White Pine County, increased from an estimated \$27,433 in 2013 to an estimated \$30,585 in 2017, a significant net increase of \$3,152 or 11.5 percent. Between 2013 and 2017, per capita income increased in all five counties in northeastern Nevada, including Elko County, Eureka County, Humboldt County, Lander County, and White Pine County.

In Elko County, per capita income increased significantly between 2013 and 2017, increasing from an estimated \$28,358 in 2013 to an estimated \$32,498 in 2017, a net increase of \$4,140 or 14.6 percent and, in Eureka County, per capita income also increased significantly between 2013 and 2017, increasing from an estimated \$28,056 in 2013 to an estimated \$35,606 in 2017, a net increase of \$7,550 or 26.9 percent. Between 2013 and 2017, per capita income in Humboldt County increased from an estimated \$26,515 in 2013 to an estimated \$29,215 in 2017, a net increase of \$2,700 or 10.2 percent. In Lander County, per capita income increased from an estimated \$29,800 in 2013 to an estimated \$30,256 in 2017, a net increase of just \$456 or 1.5 percent. Between 2013 and 2017, per capita income in White Pine County increased from an estimated \$24,435 in 2013 to an estimated \$25,350 in 2017, a net increase of \$915 or 3.7 percent.

Per capita income for the entire state of Nevada and for the entire United States increased at net rates and percentage rates that were measurably less than the net increase and percentage increase in per capita income for all of northeastern Nevada between 2013 and 2017. Between 2013 and 2017, per capita income for the entire state of Nevada increased from an estimated \$26,589 in 2013 to an estimated \$28,450 in 2017, a net increase of \$1,861 or 7.0 percent.

Between 2013 and 2017, per capita income for entire United States increased from an estimated \$28,155 in 2013 to an estimated \$31,177 in 2017, a net increase of \$3,022 or 10.7 percent.

<b>Table 5.7 – Per Capita (Mean) Income, Individuals (2017 Inflation-Adjusted Dollars) Communities within the Northeastern Nevada Regional Development Authority 2013 and 2017</b>				
<b>Community</b>	<b>2013</b>	<b>2017</b>	<b>2013-2017 Actual Change</b>	<b>2013-2017 Percent Change</b>
<b>Elko County</b>	<b>\$28,358</b>	<b>\$32,498</b>	<b>\$4,140</b>	<b>14.6%</b>
Carlin	\$29,339	\$34,456	\$5,117	17.4%
Elko	\$31,042	\$35,066	\$4,024	13.0%
Wells	\$23,401	\$23,998	\$597	2.6%
West Wendover	\$14,982	\$22,701	\$7,719	51.5%
<b>Eureka County</b>	<b>\$28,056</b>	<b>\$35,606</b>	<b>\$7,550</b>	<b>26.9%</b>
Eureka	\$24,700	\$35,331	\$10,631	43.0%
<b>Humboldt County</b>	<b>\$26,515</b>	<b>\$29,215</b>	<b>\$2,700</b>	<b>10.2%</b>
Winnemucca	\$28,602	\$30,258	\$1,656	5.8%
<b>Lander County</b>	<b>\$29,800</b>	<b>\$30,256</b>	<b>\$456</b>	<b>1.5%</b>
Austin	\$17,523	\$35,814	\$18,291	104.4%
Battle Mountain	\$31,153	29,839	-\$1,314	-4.2%
<b>White Pine County</b>	<b>\$24,435</b>	<b>\$25,350</b>	<b>\$915</b>	<b>3.7%</b>
Ely	\$28,226	\$29,964	\$1,738	6.2%
<b>Northeastern Nevada Regional Development Authority - REGION</b>	<b>\$27,433 (Average)</b>	<b>\$30,585 (Average)</b>	<b>\$3,152</b>	<b>11.5%</b>
<b>State of Nevada</b>	<b>\$26,589</b>	<b>\$28,450</b>	<b>\$1,861</b>	<b>7.0%</b>
<b>United States</b>	<b>\$28,155</b>	<b>\$31,177</b>	<b>\$3,022</b>	<b>10.7%</b>

Source: U.S. Census Bureau; American Community Survey, 5-Year Estimates; 2013 and 2017

#### 5.1.h Percent of Total Population Living Below the Poverty Line

Table 5.8 presents the change in the percentage of total population living below the poverty line for each county within the Northeastern Nevada Regional Development Authority region, the state of Nevada, and for the United States between 2013 and 2017. The estimated (average) percentage of total population living below the poverty line for the entire Northeastern Nevada Regional Development Authority region for both 2013 and 2017 is highlighted.

Between 2013 and 2017, the estimated (average) percentage of total population living below the poverty line for all of northeastern Nevada, taking into account changes in the percentage of total population living below the poverty line for Elko County, Eureka County, Humboldt County, Lander County, and White Pine County combined, decreased slightly, falling from a percentage of 11.44 percent in 2013 to a percentage of 11.36 percent in 2017, a net decline of just 0.08

percent or a percentage decline of -0.70 percent. Despite significant increases in the percentage of total population living below the poverty line in both Elko County and Lander County between 2013 and 2017, the decline in the percentage of total population living below the poverty line for all of northeastern Nevada was largely driven by the significant declines in the percentage of total population living below the poverty line in Eureka County and Humboldt County. Between 2013 and 2017, the percentage of total population living below the poverty line in White Pine County remained relatively unchanged.

<b>Table 5.8 – Percent of Total Population Living Below the Poverty Line Communities within the Northeastern Nevada Regional Development Authority 2013 and 2017</b>				
<b>Community</b>	<b>2013</b>	<b>2017</b>	<b>2013-2017 Actual Change</b>	<b>2013-2017 Percent Change</b>
<b>Elko County</b>	<b>8.8%</b>	<b>11.5%</b>	<b>2.7%</b>	<b>30.7%</b>
Carlin	5.9%	5.7%	-0.2%	-3.4%
Elko	6.3%	9.7%	3.4%	54.0%
Wells	7.9%	5.2%	-2.7%	-34.2%
West Wendover	24.8%	15.3%	-9.5%	-38.3%
<b>Eureka County</b>	<b>13.9%</b>	<b>10.0%</b>	<b>-3.9%</b>	<b>-28.1%</b>
Eureka	16.9%	10.8%	-6.1%	-36.1%
<b>Humboldt County</b>	<b>12.3%</b>	<b>9.1%</b>	<b>-3.2%</b>	<b>-26.0%</b>
Winnemucca	11.3%	7.8%	-3.5%	-31.0%
<b>Lander County</b>	<b>9.3%</b>	<b>13.2%</b>	<b>3.9%</b>	<b>41.9%</b>
Austin	15.2%	0.2%	-15.0%	-98.7%
Battle Mountain	8.7%	14.1%	5.4%	62.1%
<b>White Pine County</b>	<b>12.9%</b>	<b>13.0%</b>	<b>0.1%</b>	<b>0.8%</b>
Ely	11.2%	15.0%	3.8%	33.9%
<b>Northeastern Nevada Regional Development Authority - REGION</b>	<b>11.44% (Average)</b>	<b>11.36% (Average)</b>	<b>-0.08%</b>	<b>-0.70%</b>
<b>State of Nevada</b>	<b>15.0%</b>	<b>14.2%</b>	<b>-0.8%</b>	<b>-5.3%</b>
<b>United States</b>	<b>15.4%</b>	<b>14.6%</b>	<b>-0.8%</b>	<b>-5.2%</b>

Source: U.S. Census Bureau; American Community Survey, 5-Year Estimates; 2013 and 2017

In Elko County, the percentage of total population living below the poverty line increased significantly between 2013 and 2017, increasing from an estimated 8.8 percent in 2013 to an estimated 11.5 percent in 2017, a net increase of 2.7 percent or percentage increase of 30.7 percent. In Eureka County, the percentage of total population living below the poverty line decreased significantly between 2013 and 2017, decreasing from an estimated 13.9 percent in 2013 to an estimated 10.0 percent in 2017, a net decrease of 3.9 percent or percentage decrease of -28.1 percent. Between 2013 and 2017, the percentage of total population living below the poverty line in Humboldt County decreased from an estimated 12.3 percent in 2013 to an

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estimated 9.1 percent in 2017, a significant net decrease of 3.2 percent or a percentage decrease of -26.0 percent. In Lander County, the percentage of total population living below the poverty line increased measurably, increasing from an estimated 9.3 percent in 2013 to an estimated 13.2 percent in 2017, a net increase of 3.9 percent or percentage increase of 41.9 percent. In White Pine County, the percentage of total population living below the poverty line barely increased, increasing from an estimated 12.9 percent in 2013 to an estimated 13.0 percent in 2017, a net increase of just 0.1 percent or percentage increase of just 0.8 percent.

Statewide, the percentage of total population living below the poverty line for the entire state of Nevada decreased from an estimated 15.0 percent in 2013 to an estimated 14.2 percent in 2017, a net decrease of 0.8 percent or percentage decrease of -5.3 percent. Nationwide, the percentage of total population living below the poverty line for the entire United States mirrored the percentage of total population living below the poverty line for the entire state of Nevada, decreasing from an estimated 15.4 percent in 2013 to estimated 14.6 percent in 2017, a net decrease of 0.8 percent or percentage decrease of -5.2 percent.

#### 5.1.i Civilian Workforce (Individuals 16 Years or Older)

Table 5.9 presents the change in the size of the civilian workforce (individuals 16 years of age or older) for each county within the Northeastern Nevada Regional Development Authority region, the state of Nevada, and for the United States between 2013 and 2017. The civilian workforce for the entire Northeastern Nevada Regional Development Authority region for both 2013 and 2017 is highlighted.

Between 2013 and 2017, the entire civilian workforce for all of northeastern Nevada, taking into account changes in the size of the civilian workforce in Elko County, Eureka County, Humboldt County, Lander County, and White Pine County, increased from an estimated 63,925 total individuals in 2013 to an estimated 66,249 total individuals in 2017, a net increase of 2,324 total individuals or 3.6 percent. Much of the growth in the civilian workforce for all of northeastern Nevada was driven by growth in the overall size of the civilian workforce in Elko County, Eureka County, and Humboldt County as the size of the civilian workforce in Lander County remained relatively unchanged between 2013 and 2017 and actually declined in White Pine County between 2013 and 2017.

In Elko County, the civilian workforce measurably increased between 2013 and 2017, increasing from an estimated 37,364 total individuals in 2013 to an estimated 39,478 total individuals in 2017, a net increase of 2,114 total individuals or 5.7 percent. In Eureka County, the civilian workforce increased from an estimated 1,339 total individuals in 2013 to an estimated 1,393 total individuals in 2017, a net increase of just 54 total individuals or 4.0 percent. Between 2013 and 2017, the civilian workforce in Humboldt County increased from an estimated 12,697 total individuals in 2013 to an estimated 12,924 total individuals in 2017, a net increase of 227 total individuals or 1.8 percent. In Lander County, the civilian workforce increased marginally, increasing from an estimated 4,397 total individuals in 2013 to an estimated 4,422 total individuals in 2017, a net increase of just 25 total individuals or 0.6 percent and, in White Pine County, the civilian workforce declined slightly between 2013 and 2017, declining from an

estimated 8,128 total individuals in 2013 to an estimated 8,032 total individuals in 2017, a net decrease of just 96 total individuals or -1.2 percent.

<b>Table 5.9 – Civilian Workforce (Individuals 16 Years or Older) Communities within the Northeastern Nevada Regional Development Authority 2013 and 2017</b>				
<b>Community</b>	<b>2013</b>	<b>2017</b>	<b>2013-2017 Actual Change</b>	<b>2013-2017 Percent Change</b>
<b>Elko County</b>	<b>37,364</b>	<b>39,478</b>	<b>2,114</b>	<b>5.7%</b>
Carlin	2,160	1,975	-185	-8.6%
Elko	28,199	30,697	2,498	8.9%
Wells	1,556	1,654	98	6.3%
West Wendover	2,779	2,917	138	5.0%
<b>Eureka County</b>	<b>1,339</b>	<b>1,393</b>	<b>54</b>	<b>4.0%</b>
Eureka	964	973	9	0.9%
<b>Humboldt County</b>	<b>12,697</b>	<b>12,924</b>	<b>227</b>	<b>1.8%</b>
Winnemucca	9,705	10,593	888	9.1%
<b>Lander County</b>	<b>4,397</b>	<b>4,422</b>	<b>25</b>	<b>0.6%</b>
Austin	364	357	-7	-1.9%
Battle Mountain	4,033	4,065	32	0.8%
<b>White Pine County</b>	<b>8,128</b>	<b>8,032</b>	<b>-96</b>	<b>-1.2%</b>
Ely	4,545	4,556	11	0.2%
<b>Northeastern Nevada Regional Development Authority - REGION</b>	<b>63,925</b>	<b>66,249</b>	<b>2,324</b>	<b>3.6%</b>
<b>State of Nevada</b>	<b>2,143,541</b>	<b>2,292,486</b>	<b>148,945</b>	<b>6.9%</b>
<b>United States</b>	<b>246,191,954</b>	<b>255,797,692</b>	<b>9,605,738</b>	<b>3.9%</b>

Source: U.S. Census Bureau; American Community Survey, 5-Year Estimates; 2013 and 2017

Statewide, the total civilian workforce for the entire state of Nevada increased between 2013 and 2017, increasing from an estimated 2.1 million total workers in 2013 to an estimated 2.3 million total workers in 2017, a net increase of approximately 148,945 total workers or 6.9 percent. Between 2013 and 2017, the total civilian workforce nationwide for the entire United States increased from an estimated 246.2 million total workers in 2013 to an estimated 255.8 million workers in 2017, a net increase of approximately 9.6 million total workers or 3.9 percent.

#### 5.1.k Civilian Unemployment Rate (Individuals 16 Years or Older)

Table 5.10 presents the change in the civilian unemployment rate (for individuals 16 years of age or older) for each county within the Northeastern Nevada Regional Development Authority region, the state of Nevada, and for the United States between 2013 and 2017. The estimated

(average) civilian unemployment rate for the entire Northeastern Nevada Regional Development Authority region for both 2013 and 2017 is highlighted.

<b>Table 5.10 – Civilian Unemployment Rate (Individuals 16 Years or Older) Communities within the Northeastern Nevada Regional Development Authority 2013 and 2017</b>				
<b>Community</b>	<b>2013</b>	<b>2017</b>	<b>2013-2017 Actual Change</b>	<b>2013-2017 Percent Change</b>
<b>Elko County</b>	<b>5.7%</b>	<b>4.4%</b>	<b>-1.3%</b>	<b>-22.8%</b>
Carlin	10.6%	11.8%	1.2%	11.3%
Elko	4.8%	3.7%	-1.1%	-22.9%
Wells	7.4%	4.9%	-2.5%	-33.8%
West Wendover	7.6%	1.3%	-6.3%	-82.9%
<b>Eureka County</b>	<b>5.4%</b>	<b>-</b>	<b>-</b>	<b>-</b>
Eureka	1.6%	-	-	-
<b>Humboldt County</b>	<b>9.1%</b>	<b>7.3%</b>	<b>-1.8%</b>	<b>-19.8%</b>
Winnemucca	7.4%	7.2%	-0.2%	-2.7%
<b>Lander County</b>	<b>11.2%</b>	<b>7.6%</b>	<b>-3.6%</b>	<b>-32.1%</b>
Austin	17.7%	12.1%	-5.6%	-31.6%
Battle Mountain	10.7%	7.4%	-3.3%	-30.8%
<b>White Pine County</b>	<b>9.9%</b>	<b>6.2%</b>	<b>-3.7%</b>	<b>-37.4%</b>
Ely	8.8%	6.7%	-2.1%	-23.9%
<b>Northeastern Nevada Regional Development Authority - REGION</b>	<b>8.3% (Average)</b>	<b>6.4% (Average)</b>	<b>-1.9%</b>	<b>-22.8%</b>
<b>State of Nevada</b>	<b>12.5%</b>	<b>8.0%</b>	<b>-4.5%</b>	<b>-36.0%</b>
<b>United States</b>	<b>9.7%</b>	<b>6.6%</b>	<b>-3.1%</b>	<b>-32.0%</b>

Source: U.S. Census Bureau; American Community Survey, 5-Year Estimates; 2013 and 2017

Between 2013 and 2017, the estimated (average) civilian unemployment rate for all of northeastern Nevada, taking into account change in the civilian unemployment rate for Elko County, Eureka County, Humboldt County, Lander County, and White Pine county, decreased significantly between 2013 and 2017, decreasing from an estimated 8.3 percent in 2013 to an estimated 6.4 percent in 2017, a net decrease of 1.9 percent or percentage decrease of -22.8 percent. The decline in the estimated (average) civilian unemployment rate for all of northeastern Nevada was driven by comparable significant declines in the civilian unemployment rate in Elko County, Humboldt County, Lander County, and White Pine County between 2013 and 2017. Note that the civilian unemployment rate was unavailable for Eureka County in 2017.

In Elko County, the civilian unemployment rate declined significantly between 2013 and 2017, decreasing from an estimated 5.7 percent in 2013 to an estimated 4.4 percent in 2017, a net

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decline of 1.3 percent or a percentage decline of -22.8 percent. While the civilian unemployment rate for Eureka County was unknown in 2017, the civilian unemployment rate for Eureka County in 2013 was 5.4 percent and was the lowest civilian unemployment rate among all five counties in northeastern Nevada. Between 2013 and 2017, the civilian unemployment rate in Humboldt County decreased from an estimated 9.1 percent in 2013 to an estimated 7.3 percent in 2017, a net decrease of 1.8 percent or a percentage decline of -19.8 percent. In Lander County, the civilian unemployment rate declined significantly between 2013 and 2017, decreasing from an estimated 11.2 percent in 2013 to an estimated 7.6 percent in 2017, a net decrease of 3.6 percent or a percentage decline of -32.1 percent. In White Pine County, the civilian unemployment rate also declined significantly between 2013 and 2017, decreasing from an estimated 9.9 percent in 2013 to an estimated 6.2 percent in 2017, a net decrease of 3.7 percent or a percentage decline of -37.4 percent.

Comparatively, the estimated civilian unemployment rate for both the state of Nevada and for the entire United States also declined significantly between 2013 and 2017. Statewide, the estimated civilian unemployment rate for the entire state of Nevada declined from an estimated 12.5 percent in 2013 to an estimated 8.0 percent in 2017, a net decrease of approximately 4.5 percent or -36.0 percent. Nationwide, the estimated civilian unemployment rate for the entire United States declined from an estimated 9.7 percent in 2013 to an estimated 6.6 percent in 2017, a net decrease of approximately 3.1 percent or -32.0 percent.

## **5.2 Identifying Priority Conditions in the Socio-Demographic and Economic Data**

As part of Stronger Economies Together Module 2, *Exploring Your Region's Demographics*, and as part of the assessment of the various socio-demographic and economic conditions outlined in the previous sub-section, participants, working in small groups and who attended the first regional strategic economic development planning workshop on October 3, 2019 and October 4, 2019 were asked to identify a set of specific conditions to be addressed as part of the new Comprehensive Economic Development Strategy for Northeastern Nevada. Workshop participants were asked to answer the following five questions:

- What *conditions* does the data describe?
- What *direction* of change does the data describe?
- What is the *intensity* of that change?
- How does the region *compare* with communities within the region, the state, nationally?
- What *overall picture* does the data paint?

Twelve specific conditions were identified for northeastern Nevada. While several of the small groups focused on similar socio-demographic and economic conditions, each individual group



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provided a unique take on the impact that the specific socio-demographic and economic trend would have on northeastern Nevada and the regional economic landscape.

### 5.2.a Condition 1: Median Family Income

Workshop participants noted that median family income for northeastern Nevada had increased significantly between 2013 and 2017, increasing by an estimated \$11,594 or 15.1 percent and that median family income in 2017 in northeastern Nevada, \$88,424, was significantly greater than median family income in 2017 for the entire state of Nevada, \$65,469, and significantly greater than median family income in 2017 for the entire United States, \$70,850. Eureka County and Lander County, part of the Northeastern Nevada Regional Development Authority, each had median family income levels greater than that of the entire region in 2017 while median family income in Eureka County, Humboldt County, and White Pine County was less than median family income for all of northeastern Nevada in 2017. Overall, workshop participants noted that, relative to the rest of the state and the rest of the county, northeastern Nevada families, based on increases in median family income, seem to be thriving.

### 5.2.b Condition 2: Civilian Unemployment Rate

The civilian unemployment rate in northeastern Nevada has declined significantly between 2013 and 2017, decreasing a total of 1.9 percent or by a percentage decrease of -22.8 percent. While the civilian unemployment rate for the entire state of Nevada and for the entire United States decreased at greater actual and percentage change rates between 2013 and 2017, the civilian unemployment rate in northeastern Nevada, 6.4 percent, was measurably less than the civilian unemployment rate for the entire state of Nevada, 8.0 percent, and for the entire United States, 6.6 percent, in 2017. Overall, the civilian unemployment rate has declined significantly across the entire region and for each of the five member counties within the Northeastern Nevada Regional Development Authority area. While reductions in the civilian unemployment rate are generally positive, workshop participants expressed concern that if new businesses are interested in locating operations within the region or if existing businesses are interested in expanding their operations, it may become increasingly difficult to find qualified workers to fill vacant positions.

### 5.3.c Condition 3: Percent of Population Living Below the Poverty Line

While the percentage of total population living below the poverty line throughout northeastern Nevada has declined, somewhat, between 2013 and 2017, decreasing by a total of 0.08 percent or a percentage decline of -0.70 percent, workshop participants noted that several counties in northeastern Nevada, including Elko County, Lander County, and White Pine County, saw increases in the percentage of their total populations living below the poverty line between 2013 and 2017. While the regional poverty rate for northeastern Nevada, 11.4 percent has declined and remained lower than the statewide poverty rate, 14.2 percent, and lower than the nationwide poverty rate, 14.6 percent, in 2017, local and countywide variation indicates that the region's overall economic growth has not equally impacted each of the member counties. While the region, as a whole, remains relatively attractive to outside investment and migration due to the region's overall decline in poverty, there still exists a significant need for higher paying employment opportunities that can help raise additional people out of poverty.

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#### 5.3.d Condition 4: Aging Population

The median age for all of northeastern Nevada, 38.8 years of age in 2017, has increased significantly between 2013 and 2017, increasing by a total of 1.7 years or 4.7 percent, and remains measurably larger than the median age for the entire state of Nevada, 37.7 years of age, and measurably larger than the median age for the entire United States, 37.8 years of age, in 2017. Except for a minor decrease of 0.1 years or -0.3 percent between 2013 and 2017 in Humboldt County and for a decrease of 1.5 years or -3.7 percent between 2013 and 2017 in White Pine County, the median age has generally increased significantly throughout the region. The continued aging of the region's overall total population will likely lead to future increases in the demand for various retiree and senior services including healthcare and social services. The continued aging of the region's overall total population further complicates the ability of new or existing firms within northeastern Nevada to find new employees to fill vacant positions as an increasingly large percentage of the region's total population approaches or moves into retirement each year.

#### 5.3.e Condition 5: Median Family Income

As previously mentioned, median family income for all of northeastern Nevada has increased significantly between 2013 and 2017, increasing by \$11,594 or 15.1 percent, and that median family income for all five counties, Elko County, Eureka County, Humboldt County, Lander County, and White Pine County, have also increased significantly between 2013 and 2017. Compared to increases in median family income statewide and nationwide, median family income in northeastern Nevada has grown at a rate more than double the growth rate for the entire state of Nevada and at a rate more than double the growth rate for the entire United States over the same 2013 to 2017 period. Overall, workshop participants pointed out that the continued rise in median family income throughout northeastern Nevada has increased the overall buying power of families living throughout northeastern Nevada but has led to wage growth pressures for individual firms operating throughout the region. Overtime, the growth in median family income, fueled by temporary increases in wages paid by individual firms, may erode gains made in total buying power and may lead to unsustainable wage cost increases for various firms located and operating throughout northeastern Nevada. The rise in wages throughout northeastern Nevada has also been fueled, in part, to continued declines in the civilian unemployment rate and the overall availability of qualified and skilled workers.

#### 5.3.f Condition 6: Decreasing Workforce

Region-wide, the overall size of the civilian workforce (individuals 16 years or older) throughout northeastern Nevada increased only slightly between 2013 and 2017, increasing by just 2,324 total individuals or 3.6 percent. Comparatively, the civilian workforce for the entire state of Nevada increased by 6.9 percent between 2013 and 2017 and, for the entire United States, increased by 3.9 percent between 2013 and 2017. At the county level, growth in the civilian workforce was ever more anemic in Humboldt County, increasing by just 1.8 percent between 2013 and 2017, and in Lander County, increasing by just 0.6 percent between 2013 and 2017. In White Pine County, the civilian workforce actually decreased between 2013 and 2017,

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decreasing by -1.2 percent. Coupled with a declining civilian unemployment rate for the region, individual firms, both new and existing, have found it increasingly difficult to recruit and retain needed workers and have had to absorb significant wage cost increases in order to recruit and retain whatever workforce they have been able to secure. Workshop participants noted that it is vital for the region to focus on expanding and growing the regional civilian workforce and invest in various professional development and vocational training programs in order to grow the region's overall civilian workforce.

#### 5.3.g Condition 7: Civilian Workforce

As mentioned previously for Condition 6, the civilian workforce (individuals 16 years or older) for northeastern Nevada, while growing by 3.6 percent between 2013 and 2017, has failed to keep pace with the growth of the civilian workforce for the entire state of Nevada, an increase of 6.9 percent between 2013 and 2017, and with the growth of the civilian workforce for the entire United States, an increase of 3.9 percent between 2013 and 2017. While growth in the civilian workforce was relatively robust in Elko County and Eureka County, the growth in the civilian workforce in Humboldt County and Lander County was generally anemic and actually declined in White Pine County. Workshop participants noted that further investment and improvement in the region's overall stock of critical infrastructure, community and social services, and overall quality of life may be needed to attract new workers and additional population to northeastern Nevada in order to fill existing vacant positions that have begun to increase in-terms of total quantity and duration throughout the region. Continued regional growth in median household income, an increase of 11.8 percent between 2013 and 2017, median family income, an increase of 15.1 percent between 2013 and 2017, and per capita income, an increase of 11.5 percent between 2013 and 2017, does make the overall region fairly attractive to additional new workers when compared to other parts of Nevada.

#### 5.3.h Condition 8: Average Household Size

The estimated average household size of households located throughout northeastern Nevada declined by a total of 0.15 people per household or -5.1 percent between 2013 and 2017 while the average household size statewide for the state of Nevada increased slightly, by 0.01 people per household or 0.4 percent, and the average household size nationwide for the entire United States remained unchanged at 2.63 people per household in both 2013 and 2017. While there was considerable variation in the average household size of households in each of the five member counties, regionally it would appear that families are either having fewer children, that young adults are possibly moving to communities outside northeastern Nevada, and that the region is finding it increasingly difficult to attract a younger population. Continued growth in the estimated median age for northeastern Nevada, increasing by 1.7 total years or 4.7 percent between 2013 and 2017, tends to support this observation. As a result, individual communities may be forced to increase healthcare and social service levels for an aging population and that individual businesses may find it increasingly difficult to fill vacant positions from the region's existing pool of available workers. The difficulty in finding available workers to fill vacant positions is evident in the significant decline in the regional civilian unemployment, that declined by 1.9 percent or a percentage decrease of -22.8 percent, and the relatively weak increase in the

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overall size of the regional civilian workforce, that increased by 2,324 total individuals or 3.6 percent between 2013 and 2017.

#### 5.3.i Condition 9: Median Age

As already mentioned throughout this sub-section, the median age for all of northeastern Nevada measurably increased between 2013 and 2017, increasing by a total of 1.7 years or 4.7 percent. The median age also increased in Elko County, by 0.8 years or 2.4 percent, in Eureka County, by 9.0 years or 23.5 percent, and in Lander County, by 0.5 years or 1.3 percent. The median age in Humboldt County remained relatively unchanged, decreasing by just 0.1 years or -0.3 percent, and measurably declined in White Pine County, decreasing by 1.5 years or -3.7 percent. The median age for all of northeastern Nevada was also measurably greater in 2017, an estimated 38.8 years of age, than the median age for the entire state of Nevada, 37.7 years of age, and measurably greater than the median age for the entire United States, 37.8 years of age. Workshop participants noted that as a greater percentage of the total population for northeastern Nevada continues to age, individual communities will need to provide additional healthcare and social services and individual firms will find it increasingly difficult to fill existing or future positions. The region must focus on reversing this trend by developing programs and initiatives designed to retain younger individuals and encourage in-migration of younger individuals and families that typically consume fewer public services and can fill existing and future positions.

#### 5.3.j Condition 10: Total Population

Between 2013 and 2017, the total population in northeastern Nevada increased by a total of 2,444 individuals or 2.9 percent, nearly half the rate of growth for the entire state of Nevada, 5.8 percent between 2013 and 2017, but on par with the rate of growth for the entire United States, 3.0 percent between 2013 and 2017. While Elko County's total population increased by 4.7 percent, Humboldt County's total population increased by 1.7 percent, and Lander County's total population increased by 0.7 percent, the total population of Eureka County declined by -4.2 percent between 2013 and 2017 and the total population of White Pine County declined by -1.6 percent between 2013 and 2017. While the growth in total population for all of northeastern Nevada has been relatively positive and stable, the continued decline in the civilian unemployment rate and general anemic increase in the civilian workforce for northeastern Nevada has created a growing worker shortage where new businesses and existing businesses have found it increasingly difficult to fill vacant positions or retain existing employees without having to significantly increase wage costs. Although additional population growth may create political and cultural tension within the region, improved growth in the region's total population will be needed in order to support continued economic growth and the continued expansion and creation of existing and new businesses.

#### 5.3.k Condition 11: Poverty Line

As previously mentioned in this sub-section, the percent of total population living below the poverty line for all of northeastern Nevada declined only slightly between 2013 and 2017, decreasing by a total of just 0.08 percent or a percentage decline of only -0.70 percent. Comparatively, the poverty rate for the entire state of Nevada declined by a percentage decrease

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of -5.3 percent between 2013 and 2017 and the poverty rate for the entire United States declined by a percentage decrease of -5.2 percent between 2013 and 2017. While the poverty rate significantly declined in Eureka County and Humboldt County and remained relatively unchanged in White Pine County, the poverty rate significantly increased in Elko County, by 2.7 percent or a percentage increase of 30.7 percent, and in Lander County, by 3.9 percent or a percentage increase of 41.9 percent between 2013 and 2017. The significant disparity in the behavior of the poverty rate at the county level in northeastern Nevada indicates that each individual county will face different challenges in addressing poverty through the provision of various social services or through their own unique economic development policies. Regionally, the Northeastern Nevada Regional Development Authority can provide coordination services and assist individual counties by recruiting and supporting new businesses that pay higher wages and support the efforts of other organizations involved in workforce development and training services.

#### 5.3.1 Condition 12: Median Family Income vs. Per Capita (Mean) Income

While the various measures of income, median household income, median family income, and per capita income, have each increased for northeastern Nevada between 2013 and 2017, the growth in median family income and per capita income have grown inconsistently when compared to growth in median family income and growth in per capita income for each of the five member counties and for the state of Nevada and the United States. Between 2013 and 2017, median family income for northeastern Nevada increased by 15.1 percent while median family income for the entire state of Nevada increased by 6.7 percent and by 9.5 percent for the entire United States. Per capita income for northeastern Nevada, however, grew by 11.5 percent between 2013 and 2017, while per capita income for the entire state of Nevada increased by 7.0 percent and by 10.7 percent for the entire United States. While median family income in northeastern Nevada grew by almost double the rate of growth in median family income for the state of Nevada and for the United States, growth in per capita income in northeastern Nevada was generally on par with growth in per capita income statewide and nationwide between 2013 and 2017. Workshop participants suggested that this general disparity in median family income and per capita income indicates a growing opportunity to support home-based business start-ups throughout the region.

### **5.3 Community Assessment: Identifying Community Culture and Identity**

Participants who attended the second regional strategic economic development planning workshop held on October 17, 2019 in Winnemucca, Nevada were asked to answer three questions regarding northeastern Nevada's overall regional culture and identity, including:

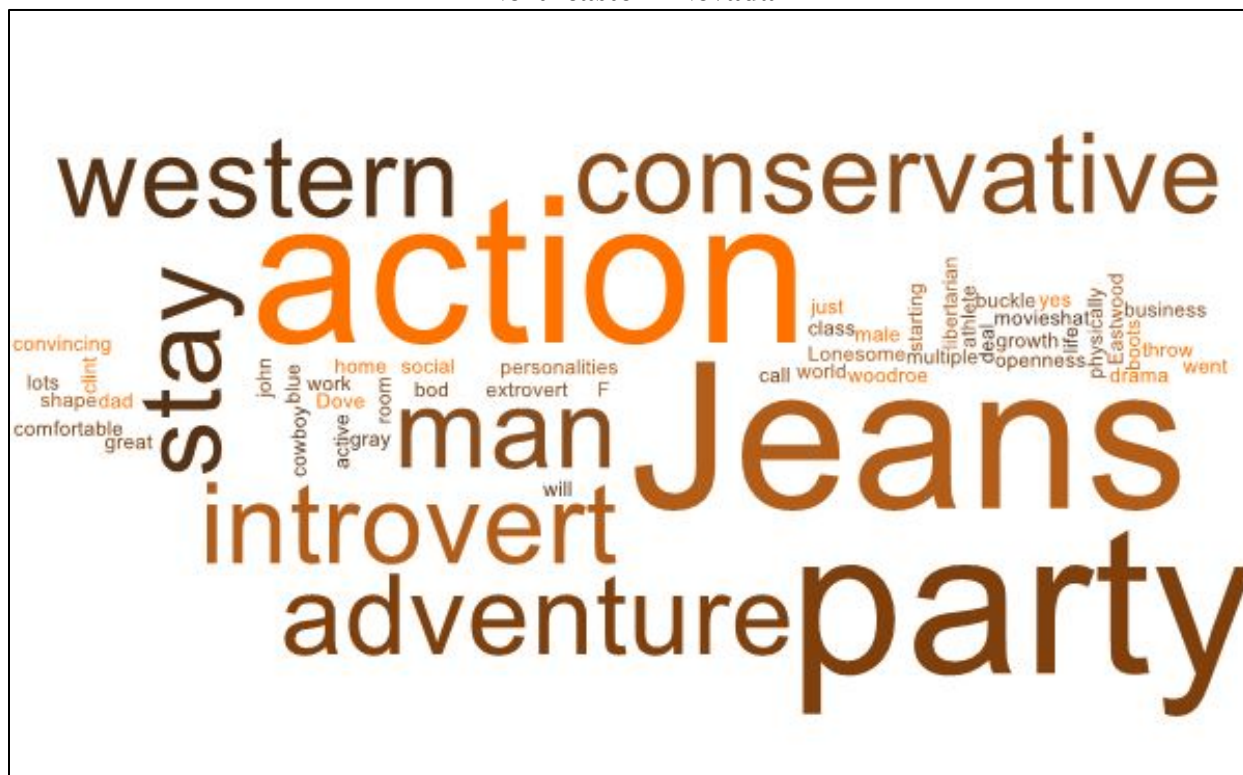
- If your region were a person, what would it be like and why?
- If your region were an automobile, what would it be like and why?
- If we put a music score to the daily activity of your region, what would it sound like and why?

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The purpose of each of these questions is to provide a general description of the existing regional culture and identity for northeastern Nevada in order to identify possible economic development strategies that may or may not be appropriate for the county to pursue.

Figure 5.1 presents a word cloud summarizing the various answers collected for the first question, *If your region were a person, what would it be like and why?*, and provided by workshop participants.

**Figure 5.1 – If your region were a person, what would it be like and why?  
Northeastern Nevada**



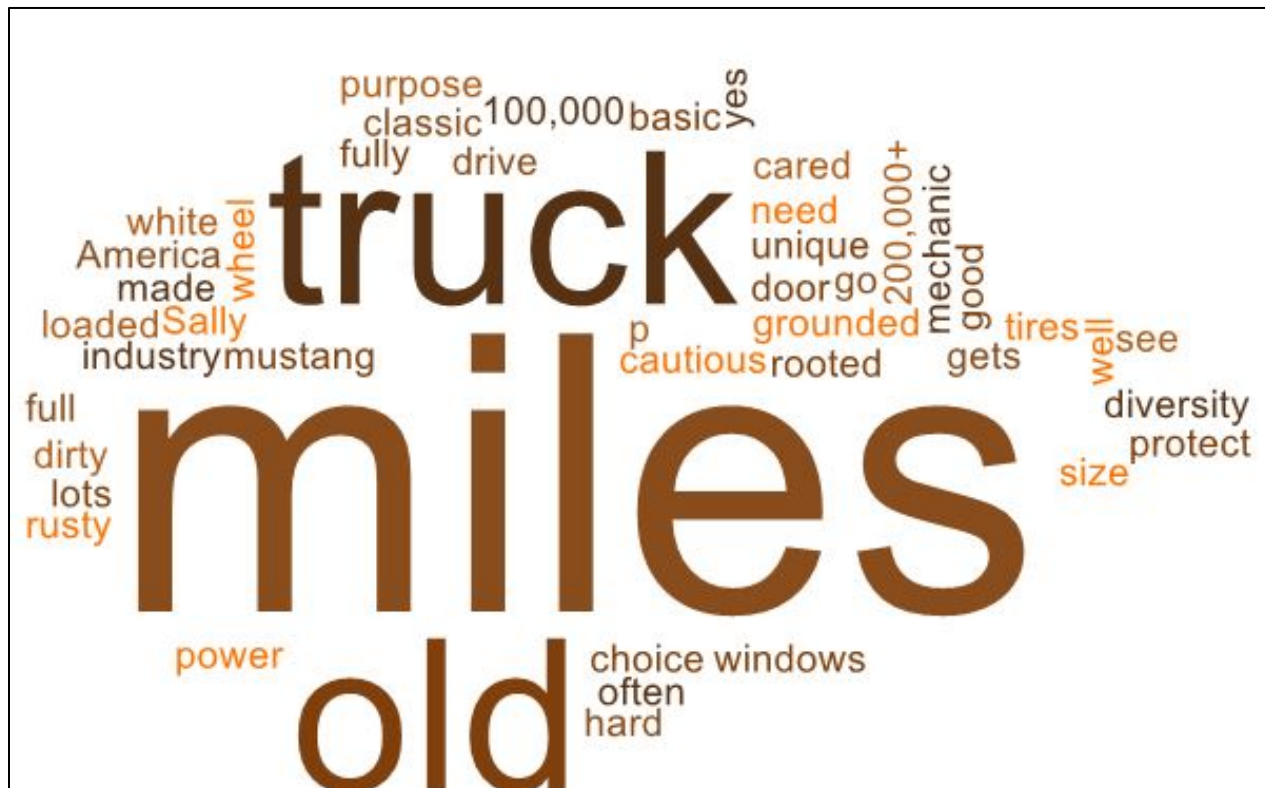
If all of northeastern Nevada could be transformed into a single human being, workshop participants generally agreed that the ‘regional person’ would likely be male, would likely subscribe to a generally conservative political ideology and would behave more as an introvert than an extrovert. ‘Western’ iconography was used to describe this individual’s clothing as workshop participants noted that this individually would be most comfortable in a pair of jeans, a collared button-up shirt, a pair of boots, a belt buckle, and, from time-to-time, a cowboy-Stetson style hat. While being an introvert to ‘outsiders’ and to people that they are not familiar with, this individual would happily attend a friend’s party or would be willing to host their own party for a select group of friends and family.

Workshop participants indicated a general willingness to be open and helpful toward their friends and family but would remain cautiously guarded toward ‘outsiders’ who are not part of their community. Workshop participants further noted that this individual would be eager to seek out adventures that are based outdoors and that would enable the person to take advantage

of the region's 'wide open spaces'. Hunting, fishing, camping, hiking, and exploring the natural outdoors would mean that this person is generally physically fit but could always benefit from additional exercise.

Figure 5.2 presents a word cloud summarizing the various answers collected for the first question, *If your region were an automobile, what would it be like and why?*, and provided by workshop participants.

**Figure 5.2 – If your region were an automobile, what would it be like and why?  
Northeastern Nevada**



While some workshop participants indicated that, if this region could be transformed into an automobile, it might be an older muscle car such as a classic 1967 Ford Mustang, most workshop participants, however, agreed that a fairly well cared for but very functional and fully-loaded pick-up truck would best describe northeastern Nevada if the region could be transformed into an automobile. This pick-up truck, again while being well cared for, would have 100,000+ miles or even 200,000+ miles on the odometer indicating that the truck is used often and for a variety of daily activities.

Several workshop participants noted that an American-made white full-sized crew cab pick-up truck, seen ubiquitously throughout northeastern Nevada as this type of pick-up truck is heavily used by the region's mines, agricultural producers, and even government employees, three sectors that comprise a significant portion of the region's overall economic base. Workshop participants generally agreed that, again while being well cared for and cherished by its owner,

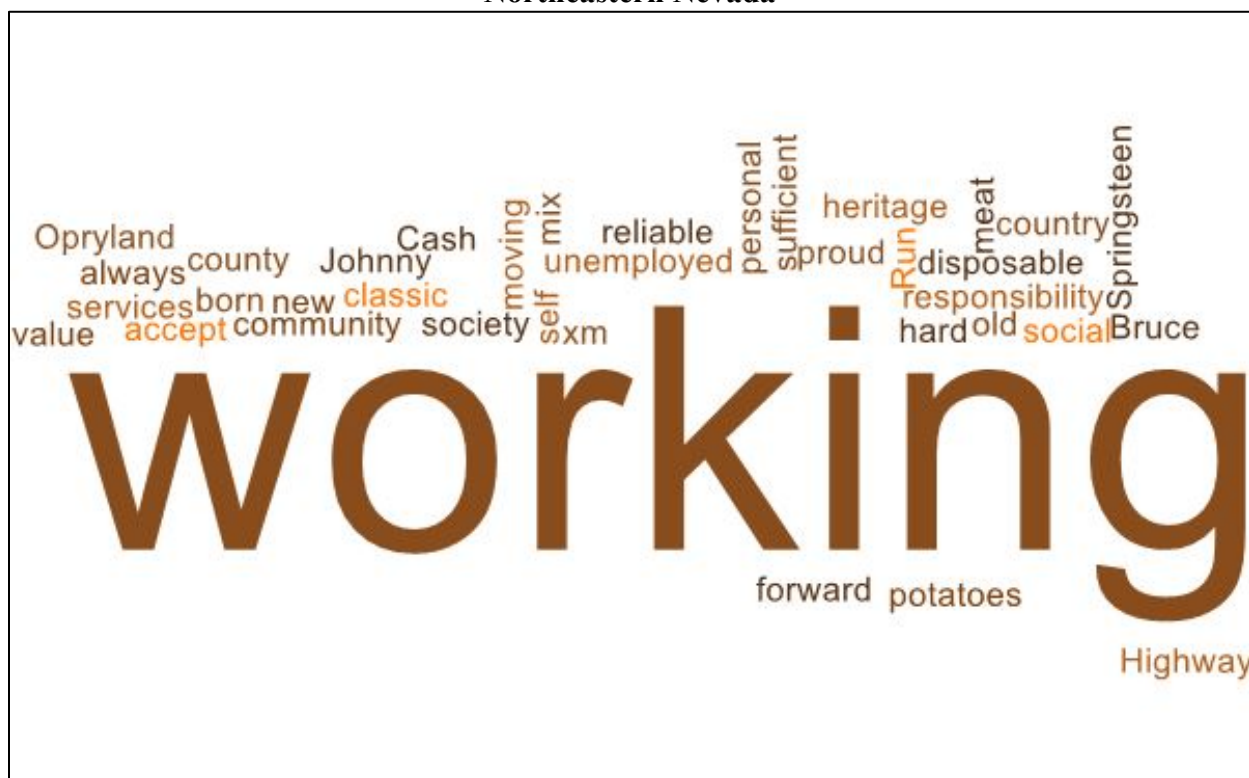


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the pick-up would certainly have some rust present, would likely require some ongoing basic maintenance, and would almost certainly be dirty and dusty given its frequent use and the environment in which the pick-up truck is regularly used in.

Figure 5.3 presents a word cloud summarizing the various answers collected for the first question, *If we put a music score to the daily activity of your region, what would it sound like and why?*, and provided by workshop participants.

**Figure 5.3 – If we put a music score to the daily activity of your region, what would it sound like and why?  
Northeastern Nevada**



Workshop participants almost unanimously agreed that the music score, or soundtrack, for northeastern Nevada would best be represented by music that speaks to the ‘working man’ and that recognizes the value of being personally responsible for oneself, being self-sufficient and self-reliable, and taking pride in the community that the person lives in. Classic country, represented by performers such as Johnny Cash, a mix of old and even new ‘Opryland’, and even more rock ‘n roll performers such as Bruce Springsteen and his song ‘Born to Run’ each represent, as archetypes, shared cultural identities and beliefs that exist throughout northeastern Nevada.

Any music score for northeastern Nevada would also emphasize other key cultural identity and beliefs including, but not limited to, being a hard working person, being proud of their personal and family heritage, and being optimistic about their region’s future. These themes are consistent with the various themes identified by workshop participants when developing a person



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and an automobile that would represent the region’s overall set of cultural identities and beliefs and workshop participants noted that any future economic development strategy should be consistent with these cultural expectations.

## **5.4 Assessment of Northeastern Nevada’s Economic Development Capacity**

During the third regional strategic economic development planning workshop held on November 14, 2019 in Ely, Nevada, workshop participants were asked to answer eight separate questions as part of a community assessment developed by Steven G. Koven and Thomas S. Lyons for the International City-County Manager’s Associations. The results of this assessment are presented here.

### **5.4.a Is the region generally supportive or antagonistic toward business interests and growth? Why?**

While workshop participants generally agreed that the region’s existing population is generally antagonistic toward business interests and growth, several workshop participants did note that, in certain circumstances, the population has been supportive of business interests and. Specifically, workshop participants noted general support of ‘buy local’ initiatives designed to support local and regionally-based small businesses. However, workshop participants did note that there is a strong distrust of new economic growth initiatives and the potential threat that new growth could pose to the region’s existing values and sense of community identity. Workshop participants noted that it will be important to educate the public on how new economic growth can improve individual quality of life while not threatening existing values and the existing community identity.

### **5.4.b Is the region generally supportive or antagonistic toward government programs and incentives? Why?**

Workshop participants universally agreed that the region’s existing population is highly antagonistic toward government programs and incentives designed to support specific and individual business interests. Several workshop participants noted that the use of government programs and incentives to assist specific and individual business interests works counter to the region’s sense of self-sufficiency and the general belief that government programs and incentives should not be used to directly intervene in open and competitive market operations. As part of this sense of antagonism toward government programs and incentives, workshop participants further noted that a strong ‘NIMBY’ (Not In My Back Yard) attitude has historically and continues to exist throughout the region. New strategic economic development and initiatives that would depend heavily on the use of government programs and incentives would likely encounter strong resistance from the region’s existing population. Workshop participants agreed that community-targeted government programs and incentives would largely be viewed as a threat to existing values and the current community and regional identity that already exists throughout the region.

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#### 5.4.c What types of programs do residents generally support – redistributive programs or developmental programs? Why?

As long as individual residents are not expected to pay for the cost of redistributive or development programs, workshop participants generally agreed that, in some limited cases, the region's population would be supportive of certain redistributive programs but that developmental programs would likely receive more direct support. While workshop participants agreed that developmental programs would likely receive more direct support from the region's population, workshop participants did note that the region's population would still oppose having to support the cost of new developmental programs. The region's existing values and community identity, that supports and fosters self-determination over entitlement and enabling, would likely be best served through developmental programs launched by various public and semi-public organizations and agencies such as the Northeastern Nevada Regional Development Authority.

#### 5.4.d Does the region have a history of public-private collaboration? Recent examples?

While workshop participants generally noted relatively strong opposition from the region's population toward government intervention into open and competitive market operations, workshop participants generally agreed that the region has a long history of public-private collaboration. Workshop participants agreed that individual firms throughout the region's most important industry sectors, most notably the mining and resource extraction industry sector and the agricultural industry sector, have long benefited from a series of public-private collaborations and partnerships between individual firms and various federal, state, regional and local government entities. While the use of public-private collaborations have been used to support and grow the region's key industry sectors, workshop participants did note that public-private collaborations have typically been used to support developmental programs as opposed to direct redistributive programs. These collaborations have employed a 'rising tide lifts all boats' strategy whereby public-private collaborations are used to grow entire industry sectors as opposed to supporting individual firms.

#### 5.4.e Is the region willing to sacrifice some of its quality of life to either promote or curtail growth?

In short, workshop participants universally agreed that the region's existing population is largely unwilling and opposed to the idea of sacrificing any level of quality of life to either promote or curtail overall economic growth. This existing strong opposition to sacrificing any level of quality of life is largely tied to the region's existing set of values and community identity and also part of a general fear toward change and the unknown. Even if quality of life can be improved through the promotion or curtailment of growth, the region's existing population will assume that the promotion or curtailment efforts will automatically result in a reduction in overall quality of life. Workshop participants noted that successful development and implementation of any future set of strategic economic development efforts while require a robust public awareness and education campaign designed to show how the specific actions could result in the preservation and eventual improvement of the region's overall quality of life. These public awareness and education campaigns should be developed and implemented jointly

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between the Northeastern Nevada Regional Development Authority and the various local municipal, county and school district agencies and organizations operating throughout the region.

5.4.f Are the elite members of the region willing to share power with others?

Workshop participants were generally mixed in their assessment of the willingness of elite members of the region to share their economic, social and political power with others. In some cases, workshop participants agreed that the region's elite economic, social and political leaders have shared their power with a diverse range of new and emerging interests while, in other cases, workshop participants noted that the region's elite economic, social and political leaders have, at times, refused to share their power and, in even other cases, used their economic, social and political power to inhibit the efforts of others. Workshop participants did agree, however, that it is critical to show alignment between the interests of the region's elite economic, social and political leaders and the interests of other parties. By developing new programs and initiatives that create this alignment and by showing how these interests can be aligned, new strategic economic development programs and initiatives will have a far greater chance at succeeding.

5.4.g Are the citizens generally accepting of change, or do they resist it? Examples of both?

Similar to the results of the previous assessment questions presented in this sub-section, workshop participants indicated a high level of resistance to change present among the region's existing population. Part of this resistance is tied to the region's existing population's general fear of the unknown and of change in general but also tied to the region's existing population's desire to protect existing values and quality of life. Much of the region's existing population is fearful that change is synonymous with a loss of control and future strategic economic development programs and initiatives will have to be developed and implemented in partnership with existing economic, social and political leaders and in partnership with the region's existing general public. While strong resistance to change does exist throughout the northeastern Nevada area, workshop participants did note a growing generational gap in that the region's younger population is growing increasingly supportive of change while the region's older population is generally opposed to change. However, even among the region's older population, there are notable examples of a slight 'softening' of this resistance and a growing level of support for change.

5.4.h Where do residents and businesspeople stand on issues of environmental sustainability?

In general, workshop participants agreed that the region's existing population and existing business community is generally supportive and proactive in regard to issues of environmental sustainability. This general level of support and proactive engagement generally stems from the overall importance that the region's natural resources and assets play in the region's overall continued economic growth and prosperity. The region's primary industry and occupation sectors, including mining and natural resource extraction and agricultural, as well as the region's existing tourism industry, are significantly dependent upon the sustainable use of the region's vast array of natural resources and assets. Recycling, appropriate land use, water issues, and the protection and conservation of several animal species are a few of the many environmental

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sustainability issues that the region’s existing population and existing business community takes a direct interest in promoting and preserving.

## **5.5 Assessment of Regional Environmental Factors for Northeastern Nevada**

During the third regional Comprehensive Economic Development Strategy workshop held on November 14, 2019 in Ely, Nevada, workshop participants completed an environmental factors community assessment. Workshop participants first completed this assessment individually and then as a single small group. The assessment, developed by Steven G. Koven and Thomas S. Lyons for the International City-County Manager’s Association, asks participants to rank ten different environmental factors using a scale of one (low), two (medium), and three (high). A score of low (1) indicates a priority area that should be immediately addressed by policy makers as soon as possible and likely poses a significant competitive disadvantage for the community. A score of medium (2) indicates an area that the locality may have a competitive advantage in but should consider further investment in in-order to prevent the factor from becoming a competitive disadvantage. A score of high (3) indicates an area of relative competitive strength that could be leveraged in order to support economic development within the community.

By assessing and defining the community’s current environment, economic development policy decisions can be developed using an objective assessment of current conditions. The ten environmental factors included in this assessment include the economic base, workforce characteristics, skill, availability of land and physical capital, energy, financial capital, tax structure, community culture, geography, and the localities research environment. Each environmental factor has a series of individual sub-factors that can be used to assess the overall relative competitive strength for a locality or region. Together, the average scores of each of the ten environmental factors and the various sub-factors presented in this sub-section provide decision makers and community leaders with a general understanding of how well or how poorly the northeastern Nevada region is positioned to support and manage future growth and development.

### **5.5.a Economic Base**

Table 5.11 presents the results of the environmental factors assessment for economic base. The average score for each individual sub-factor and for the primary environmental factor based on the group score is presented.

Economic base consists of three separate components, including lack of dependency on a single firm or industry, the capacity to diversify, and the willingness to diversify. With an average score of 1.3, workshop participants generally agreed that the northeastern Nevada’s regional economy is largely dependent on a select few individual firms and industry sectors and that the region’s overall economic base is not very diverse. Historically, workshop participants noted that the region’s overall economy has experienced significant swings of boom and bust due to national and global commodity prices for various precious metals, industrial minerals, and agricultural products.

<b>Table 5.11 – Economic Base</b> <b>Northeastern Nevada Regional Development Authority Comprehensive Economic Development Strategy Workshop</b>	
<b>Sub-Factor</b>	<b>Average Score</b>
Lack of Dependency on a Single Firm or Industry	1.3
Capacity to Diversify	2.0
Willingness to Diversify	2.6
<b>Average Score – Economic Base</b>	<b>2.0</b>

With an average score of 2.0, workshop participants indicated a moderate current ability to diversify the region’s existing economic base. This is largely because the region’s set of infrastructure assets has largely been developed to serve the specific and unique needs of a select few industry and occupation sectors such as the mining and natural resource extraction industry sector and the agricultural industry sector. Despite a high dependence on a relatively narrow set of individual firms and industry sectors and only a moderate ability to diversify, workshop participants noted a relatively high willingness to diversify, with an average score of 2.6. Workshop participants generally indicated that the region’s existing population and existing business community, despite reservations regarding change and overall economic growth, are increasingly becoming willing to support new strategic economic development programs and initiatives designed to diversify the region’s overall economic base.

#### 5.5.b Workforce Characteristics

Table 5.12 presents the results of the environmental factors assessment for workforce characteristics. The average score for each individual sub-factor and for the primary environmental factor based on the group score is presented.

<b>Table 5.12 – Workforce Characteristics</b> <b>Northeastern Nevada Regional Development Authority Comprehensive Economic Development Strategy Workshop</b>	
<b>Sub-Factor</b>	<b>Average Score</b>
Workforce Size	1.0
Total Employment (If Unemployment Rate is high, mark “Low)	2.6
Proportion in Low Wage Positions	<b>2.0</b>
<b>Average Score – Workforce Characteristics</b>	<b>1.9</b>

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Workforce characteristics consists of three separate components, including overall workforce size, the total level of employment (or unemployment) in the community, and the proportion of the current workforce in relatively low wage positions. With an average score of 1.0 for workforce size, workshop participants generally agreed that continued and future economic growth and diversification efforts have largely been hampered by an insufficiently large workforce. Workshop participants noted that any future set of strategic economic development programs and initiatives will need to be conditioned upon the region's ability to grow the overall size of the region's workforce.

With an average score of 2.6, workshop participants generally noted that the region's overall rate of unemployment has remained relatively low over the past several years and, while this is definitely a positive condition within the region, it has hampered the ability of existing and new firms to expand their operations through the hiring of new employees. The proportion of the region's existing workforce in low wage positions, with an average score of 2.0, was generally ranked as moderate. Workshop participants generally agreed that firms within the region's primary industry sectors pay generally high wages. Growth in the region's overall average wage levels has also been fueled by a stubborn lack of growth in the region's existing workforce, forcing individual firms to raise wages in order to attract new employees and in order to retain existing employees.

#### 5.5.c Skill

Table 5.13 presents the results of the environmental factors assessment for workforce skill. The average score for each individual sub-factor and for the primary environmental factor based on the group score is presented.

Workforce skill characteristics consists of two separate components, including the percentage of the total workforce competent in technology-oriented firms and the percentage of the total workforce competent in professional-oriented firms. With an average overall score of 1.2, workshop participants generally agreed that the overall skill set of the region's existing workforce trends toward low as opposed to a more moderately or highly skilled workforce.

<b>Table 5.13 – Workforce Skill Characteristics Northeastern Nevada Regional Development Authority Comprehensive Economic Development Strategy Workshop</b>	
<b>Sub-Factor</b>	<b>Average Score</b>
Percent Competent in Technology-Oriented Firms	1.2
Percent Competent in Professional-Oriented Firms	1.2
<b>Average Score – Workforce Skill</b>	<b>1.2</b>

With an average score of 1.2, workshop participants indicated that a generally small percentage of the region's existing workforce have the necessary skill sets to be considered competent to work in technology-oriented firms. With an average score of 1.2, workshop participants further indicated that a similarly small percentage of the region's existing workforce has the necessary skill sets to be considered competent to work in professional-oriented firms. As part of a new five-year Comprehensive Economic Development Strategy for the Northeastern Nevada region, workshop participants agreed that the Northeastern Nevada Regional Development Authority should work closely with the region's local school districts to develop new workforce development training programs designed to improve the region's overall mix and quality of workforce skills in order to support new and emerging industry and occupation sectors.

#### 5.5.d Land and Physical Capital

Table 5.14 presents the results of the environmental factors assessment for land and physical capital. The average score for each individual sub-factor and for the primary environmental factor based on the group score is presented.

<b>Table 5.14 – Land and Physical Capital Northeastern Nevada Regional Development Authority Comprehensive Economic Development Strategy Workshop</b>	
<b>Sub-Factor</b>	<b>Average Score</b>
Availability of Vacant Land	2.0
Availability of Underused Land	2.3
Access to Utilities (Including Communication)	1.6
Access to Transportation (Highways, Airports, etc.)	1.6
<b>Average Score – Land and Physical Capital</b>	<b>1.9</b>

With an overall average score of 1.9 for land and physical capital, workshop participants generally noted that the combined existing availability of vacant and underused land within the region and the overall existing level of access to utilities and transportation can support a moderate level of future economic growth and development. The overall availability of vacant land and the availability of underused land, with average scores of 2.0 and 2.3, were highlighted by workshop participants as the strongest land and physical capital economic assets throughout northeastern Nevada. The overall access to utilities and the overall access to transportation, with average scores of 1.6 each, were ranked as significantly weaker land and physical capital economic assets. Most notably, workshop participants indicated that a general lack of highly reliable broadband and telecommunication connectivity significantly limits the ability of the region to successfully implement new economic development programs and initiatives. Further development of the region's transportation infrastructure assets, including additional rail service to currently underserved communities within the region and the region's mix of airports and

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airfields, will be needed to attract new firms into the region and additional visitors and tourists as part of a revised regional approach to supporting and growing the region’s tourism industry sector.

#### 5.5.e Energy

Table 5.15 presents the results of the environmental factors assessment for energy. The average score for each individual sub-factor and for the primary environmental factor based on the group score is presented.

<b>Table 5.15 - Energy Northeastern Nevada Regional Development Authority Comprehensive Economic Development Strategy Workshop</b>	
<b>Sub-Factor</b>	<b>Average Score</b>
Reliability	2.4
Access	1.8
Price	2.6
<b>Average Score – Energy</b>	<b>2.3</b>

Energy consists of three separate components, including reliability, access, and price. With an overall average score of 2.3, workshop participants generally ranked the region’s mix of energy assets as moderate to strong. Reliability, with an average score of 2.4, and price, with an average score of 2.6, were identified as the strongest elements of the region’s existing mix of energy assets and noted that the pricing of energy throughout northeastern Nevada gives the region a strong competitive economic advantage in the retention of existing businesses and the recruitment of new businesses in a variety of industry and occupation sectors relative to other parts of the state of Nevada and relative to other communities and regions located throughout the western and intermountain western United States. However, with an average score of 1.8, workshop participants noted that access to energy still remains a somewhat weak economic asset for the region. Improving access to the region’s already reliable and competitively priced energy was noted by workshop participants as a priority for the Northeastern Nevada Regional Development Authority’s new five-year Comprehensive Economic Development Strategy.

#### 5.5.f Financial Capital

Table 5.16 presents the results of the environmental factors assessment for financial capital. The average score for each individual sub-factor and for the primary environmental factor based on the group score is presented.

With an overall average score of 1.4, workshop participants generally ranked the region’s overall set of financial capital assets as weak. Workshop participants further noted that the region’s



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relative weak mix of financial capital assets makes new business development and entrepreneurial start-up efforts difficult as new business start-up owners and entrepreneurs are unable to secure the needed financial capital to build their business and entrepreneurial effort.

<b>Table 5.16 – Financial Capital Northeastern Nevada Regional Development Authority Comprehensive Economic Development Strategy Workshop</b>	
<b>Sub-Factor</b>	<b>Average Score</b>
Predisposition of Local Banks to Lend	1.6
Ability to Secure Gap Financing	1.6
Ability to Secure Venture Capital	1.1
Ability to Secure Angel Capital	1.2
<b>Average Score – Financial Capital</b>	<b>1.4</b>

The predisposition of local banks to lend, with an average score of 1.6, was ranked by workshop participants as generally weak. Workshop participants attributed this generally reluctant predisposition of local banks to lend to new business start-ups and entrepreneurs to a lack of experience with new business start-ups and entrepreneurs. The ability to secure gap financing, with an average score of 1.6, the ability to secure venture capital, with an average score of 1.1, and the ability to secure angel capital, with an average score of 1.2, were each also generally determined to be weak. Improving access to gap financing, venture capital and angel capital will be a necessary first step as part of the Northeastern Nevada Regional Development Authority's new five-year Comprehensive Economic Development Strategy in order to directly support improved entrepreneurial efforts throughout the region.

#### 5.5.g Tax Structure

Table 5.17 presents the results of the environmental factors assessment for tax structure. The average score for each individual sub-factor and for the primary environmental factor based on the group score is presented.

With an overall average score of 2.0, workshop participants ranked the region's overall existing tax structure as moderate when it comes to supporting new strategic economic development programs and initiatives including the creation, attraction, retention and expansion of new and existing private sector firms. However, workshop participants did note that, when compared to other parts of the state of Nevada and to other communities and regions throughout the western and intermountain western United States, the northeastern Nevada region's existing tax structure is considerably more favorable to businesses, retirees, and residents. Workshop participants noted the region's relatively low property tax and sales tax rates, when compared to other parts of the state of Nevada and to other comparable communities and regions, the lack of an income

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tax, and relatively low business license fees charged at the local municipal and county level as major advantages for businesses, retirees, and residents operating and living throughout northeastern Nevada.

<b>Table 5.17 – Tax Structure Northeastern Nevada Regional Development Authority Comprehensive Economic Development Strategy Workshop</b>	
<b>Sub-Factor</b>	<b>Average Score</b>
Favorability to Businesses	2.0
Favorability to Retirees	2.0
Favorability to Residents	2.0
<b>Average Score – Tax Structure</b>	<b>2.0</b>

Tax structure consists of three separate components, including favorability of the tax structure to businesses, favorability of the tax structure to retirees, and favorability of the tax structure to individual residents. Each of these three components received an average score of 2.0 indicating that the region's existing tax structure is moderately favorable to new and existing businesses and to existing retirees and residents living throughout the region. Workshop participants did note, however, that there is considerable variability in property tax and sales tax rates and business license fees from one community to the next throughout the region. This high variability can often result in unnecessary competition between individual jurisdictions that currently comprise the northeastern Nevada region. Workshop participants also noted that the relatively low property tax rates and sales tax rates that exist throughout northeastern Nevada make it difficult for local governments, including municipalities, counties, and school districts, within the region to generate the needed financial resources to invest in new infrastructure, new educational and workforce development programs, and new strategic economic development marketing and attraction efforts that could further grow and diversify the region's economic base.

#### 5.5.h Regional Culture

Table 5.18 presents the results of the environmental factors assessment for regional culture. The average score for each individual sub-factor and for the primary environmental factor based on the group score is presented.

Regional culture consists of four separate components, including the community's overall support for the business community, the overall willingness of individuals to risk personal capital to support start-up and entrepreneurial efforts, the overall willingness to accept possible externalities including the risk associated with new business start-up and entrepreneurial efforts, and the overall willingness to alter the status quo to support new growth and economic development. With an overall average score of 1.8, workshop participants generally ranked the

region's culture and attitude toward economic growth and economic change as mostly moderate. Workshop participants noted that, while the region's historical resistance to change and economic growth and diversification has begun to 'soften', especially among the region's younger population, there is still considerable resistance to new economic development programs and initiatives that are perceived to be direct threats to existing community values and cultural identity.

<b>Table 5.18 – Regional Culture Northeastern Nevada Regional Development Authority Comprehensive Economic Development Strategy Workshop</b>	
<b>Sub-Factor</b>	<b>Average Score</b>
Support for Business	2.1
Willingness to Risk Personal Capital (Personal Funds)	1.6
Willingness to Accept Possible Externalities (Market Risk)	1.8
Willingness to Alter the Status Quo	1.8
<b>Average Score – Regional Culture</b>	<b>1.8</b>

Overall, with an average score of 2.1, workshop participants indicated a moderate level of support of the region's existing business community. With an average score of 1.6, workshop participants indicated a much lower level of willingness by individuals to risk their own financial capital to pursue a business start-up or entrepreneurial activity. With an average score of 1.8 for both a willingness to accept possible externalities (market risk) associated with a business start-up or entrepreneurial activity and a willingness to alter the status quo, workshop participants indicated a moderate but growing level of support for change and a growing willingness to accept the potential of failure associated with new business start-up and entrepreneurial activities.

#### 5.5.i Geography

Table 5.19 presents the results of the environmental factors assessment for geography. The average score for each individual sub-factor and for the primary environmental factor based on the group score is presented.

Geography consists of four separate components, including the overall desirability of the community's climate, the overall desirability of the community's topography, and the community's proximity to key economic centers, and the community's overall access to national and international markets. Overall, with an overall average score of 1.9, workshop participants ranked northeastern Nevada's mix of geographic economic assets as generally moderate. Workshop participants noted that the region's overall climate and topography is uniquely attractive to specific firms in certain key industry and occupation sectors. Being centrally

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located within the larger western and intermountain western United States provides unique opportunities to existing firms already operating within northeastern Nevada and to new firms that could potentially be recruited to establish a new operation within the region.

<b>Table 5.19 - Geography Northeastern Nevada Regional Development Authority Comprehensive Economic Development Strategy Workshop</b>	
<b>Sub-Factor</b>	<b>Average Score</b>
Desirability of Climate	2.5
Desirability of Topography	2.6
Proximity to Key Economic Centers	1.2
Access to National and International Markets	1.4
<b>Average Score – Geography</b>	<b>1.9</b>

With average scores of 2.5 and 2.6 respectively, workshop participants noted the relative strength of the region's climate and topography but, with average scores of 1.2 and 1.4 respectively, workshop participants noted the relative weakness of the region's proximity to key economic centers and overall access to critical national and international markets. The relative weakness of the region's proximity to key economic centers and overall access to critical national and international markets, according to workshop participants, is largely part of the region's underdeveloped mix of infrastructure, transportation, and telecommunication assets. Improved investment and development of these assets should be, as outlined by workshop participants, a critical part of the Northeastern Nevada Regional Development Authority's new five-year Comprehensive Economic Development Strategy.

#### 5.5.j Research Environment

Table 5.20 presents the results of the environmental factors assessment for research environment. The average score for each individual sub-factor and for the primary environmental factor based on the group score is presented.

Research environment consists of three separate components, including linkages to universities (both private and public), access to the Internet and broadband connectivity, and access to private laboratories and research facilities. With an overall average score of 1.2, workshop participants generally ranked the region's overall research environment as one of the region's weakest economic assets. In general, workshop participants agreed that the region, as a whole, has failed to properly develop and invest in the region's mix of ongoing research activities and that the state's overall system of higher education has failed to support and spearhead new research activities within the region. Workshop participants generally agreed that this has significantly curtailed new business and new industry sector and occupation sector development, further

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increasing the region’s overall economic dependence on a relatively limited mix of individual firms and industry and occupation sectors.

<b>Table 5.20 – Research Environment Northeastern Nevada Regional Development Authority Comprehensive Economic Development Strategy Workshop</b>	
<b>Sub-Factor</b>	<b>Average Score</b>
Linkage to University(ies) (Public and Private Colleges)	1.6
Access to the Internet and Broadband Connectivity	1.0
Access to Private Laboratories (Research Facilities)	1.0
<b>Average Score – Research Environment</b>	<b>1.2</b>

While the region’s overall linkage to universities, including public and private colleges, was generally ranked as low to moderate with an average score of 1.6, workshop participants universally ranked the region’s access to Internet and broadband connectivity and access to private laboratories and research facilities as low, each with an average score of 1.0 respectively. Workshop participants specifically noted that the region’s overall poor access to Internet and broadband connectivity is a significant barrier to further economic development and diversification programs and initiatives. Improvement in the region’s overall access to Internet and broadband connectivity was identified by workshop participants as an area that should receive priority within the Northeastern Nevada Regional Development Authority’s new five-year Comprehensive Economic Development Strategy.

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## 6.0 Analysis: Regional Industry Sector Assessment

This section presents an overview of industry and workforce characteristics for northeastern Nevada provided by the Nevada Governor’s Office of Economic Development as well as a comprehensive overview from Stronger Economies Together Module 3, *Focusing on Regional Competitive Advantage*, and Strong Economies Together Module 4, *Exploring Strategies for Enhancing the Regional Economy*.

### 6.1 Industry and Workforce Characteristics for Northeastern Nevada

During the first regional strategic economic development planning workshop held on October 3, 2019 and October 4, 2019 in Elko, Nevada, workshop participants were asked to evaluate a variety of industry and occupation sector conditions and additional socio-demographic and economic trends. As part of this evaluation, workshop participants identified key industry and occupation trends and key socio-demographic and economic trends that are key strengths or opportunities for the region or represent a key weakness or threat for the region that the Northeastern Nevada Regional Development Authority should focus on as part of its new five-year Comprehensive Economic Development Strategy.

#### 6.1.a Key Industry Sector and Occupational Sector Trends

A location quotient greater than 1.0 indicates that the industry sector in the local geographic area is a *net exporter*, in that the total production and output of all firms within the industry sector in the geographic area produces more goods and services than can be consumed locally. Surplus goods and services are *exported* out of the local geographic area and cash is imported into the local geographic area. A location quotient less than 1.0 indicates that the industry sector in the local geographic area is a *net importer*, in that total production and output of all firms within the industry sector in the geographic area does not produce enough goods and services to satisfy local consumption meaning that goods and services have to *imported* into the local geographic area and cash is exported out of the local geographic area. Data for industry sectors and occupation sectors are presented in this sub-section. Industry sectors are *employer* oriented (the total number of jobs provided by firms in the industry sector) and occupation sectors are *employee* oriented (the total number of jobs that individual workers currently have).

Table 6.1 presents the change in the total number of jobs between 2013 and 2018 and the location quotient for the 20 largest industry sectors in northeastern Nevada, including the counties of Elko County, Eureka County, Humboldt County, Lander County, and White Pine County, as provided by the Nevada Governor’s Office of Economic Development. The industry sectors with positive growth in the total number of new jobs between 2013 and 2018 are highlighted.

<b>Table 6.1 – Industry (Employer) Characteristics Northeastern Nevada Regional Development Authority 2013 and 2018</b>					
<b>Industry Sector</b>	<b>Total Number of Jobs 2013</b>	<b>Total Number of Jobs 2018</b>	<b>2013 to 2018 Actual Change</b>	<b>2013 to 2018 Percent Change</b>	<b>2018 Location Quotient</b>
Mining, Quarrying, and Oil and Gas Extraction	12,267	11,498	-7,969	-6.0%	61.97
Government	7,606	7,713	107	1.0%	1.15
Accommodation and Food Services	7,278	6,792	-486	-7.0%	1.77
Retail Trade	4,100	4,070	-30	-1.0%	0.90
Construction	2,687	2,291	-396	-15.0%	0.92
Health Care and Social Assistance	1,967	2,151	184	9.0%	0.38
Wholesale Trade	1,394	1,466	72	5.0%	0.89
Other Services (except Public Administration)	1,415	1,370	-45	-3.0%	0.64
Transportation and Warehousing	1,207	1,191	-16	-1.0%	0.74
Agriculture, Forestry, Fishing and Hunting	1,119	1,170	51	5.0%	2.22
Administrative and Support and Waste Management	1,168	949	-219	-19.0%	0.34
Professional, Scientific, and Technical Services	751	820	69	9.0%	0.28
Arts, Entertainment, and Recreation	752	752	0	0.0%	0.97
Manufacturing	639	508	-131	-21.0%	0.14
Finance and Insurance	456	437	-19	-4.0%	0.24
Real Estate and Rental and Leasing	381	409	28	7.0%	0.54
Utilities	372	402	30	8.0%	2.61
Management of Companies and Enterprises	425	347	-78	-18.0%	0.54
Information	279	213	-66	-24.0%	0.26
Educational Services	109	189	80	73.0%	0.16

*Source: Nevada Governor's Office of Economic Development*

In both 2013 and 2018, the Mining, Quarrying, and Oil and Gas Extraction industry sector was the single largest industry sector in northeastern Nevada, creating a total of 12,267 jobs in 2013 and creating a total of 11,498 jobs in 2018. However, the total number of jobs created in the Mining, Quarrying, and Oil and Gas Extraction industry sector did decrease between 2013 and

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2018, decreasing by a total of 769 total employment opportunities created or -6.0 percent. The Mining, Quarrying, and Oil and Gas Extraction industry sector had a location quotient of 61.97 in 2018, making this industry sector the single largest exporting industry sector in northeastern Nevada.

Government was the second largest industry sector in northeastern Nevada in both 2013 and 2018, creating a total of 7,606 jobs in 2013 and a total of 7,713 jobs in 2018, a net increase of 107 total employment opportunities created or 1.0 percent. The location quotient for the Government industry sector in 2018 was 1.15, indicating that northeastern Nevada is a net exporter of various government services to other communities and other regions outside the northeastern Nevada region. Accommodation and Food Services was the third largest industry sector in both 2013 and 2018, creating a total of 7,278 jobs in 2013 and a total of 6,792 jobs in 2018. While being the third largest industry sector in 2013 and 2018, the total number of employment opportunities created in the Accommodation and Food Services industry sector decreased between 2013 and 2018, decreasing by a total of 486 jobs or -7.0 percent. The location quotient for the Accommodation and Food Services industry sector in 2018 was 1.77, indicating that this industry sector was a net exporter of various accommodation and food services to communities and regions outside of northeastern Nevada.

Retail trade was the fourth largest industry sector in northeastern Nevada in both 2013 and 2018, creating a total of 4,100 jobs in 2013 and a total of 4,070 jobs in 2018. However, the total number of jobs created in the Retail Trade industry sector decreased by a total of 30 jobs or -1.0 percent between 2013 and 2018 and had a location quotient of 0.90, indicating that the Retail Trade industry sector in northeastern Nevada is a net importer of various retail products and services. Construction was the fifth largest industry sector in northeastern Nevada in both 2013 and 2018, creating a total of 2,687 jobs in 2013 and a total of 2,291 in 2018, a net decrease, however, in the total number of jobs created in the Construction industry sector of 396 total jobs or -15.0 percent. The Construction industry sector had a location quotient of 0.92 indicating that the Construction industry sector was a net importer of related products and services in 2018.

Other industry sectors that had positive growth in the total number of jobs created between 2013 and 2018 include Health Care and Social Assistance, an increase of 184 total jobs or 9.0 percent, Wholesale Trade, an increase of 72 total jobs or 5.0 percent, Agriculture, Forestry, Fishing and Hunting, an increase 51 total jobs or 5.0 percent, Professional, Scientific, and Technical Services, an increase of 69 total jobs or 9.0 percent, Real Estate and Rental and Leasing, an increase of 28 total jobs or 7.0 percent, Utilities, an increase of 30 total jobs or 8.0 percent, and Educational Services, an increase of 80 total jobs or 73.0 percent. In addition to Mining, Quarrying, and Oil and Gas Extraction, Government, and Accommodation and Food Services, only two other industry sectors had location quotients greater than 1.0 in 2018. In 2018, the Agriculture, Forestry, Fishing and Hunting industry sector had a location quotient of 2.22 and the Utilities industry sector had a location quotient of 2.61.

Table 6.2 presents the change in total number of jobs between 2013 and 2018 and the location quotient for the 23 largest occupation sectors in northeastern Nevada as provided by the Nevada Governor's Office of Economic Development. The industry sectors with positive growth in the total number of new jobs between 2013 and 2018 are highlighted.



<b>Table 6.2 – Occupation (Employee) Characteristics Northeastern Nevada Regional Development Authority 2013 and 2018</b>					
<b>Occupation Sector</b>	<b>Total Number of Jobs 2013</b>	<b>Total Number of Jobs 2018</b>	<b>2013 to 2018 Actual Change</b>	<b>2013 to 2018 Percent Change</b>	<b>2018 Location Quotient</b>
Construction and Extraction	6,796	6,223	-573	-8.0%	3.04
Office and Administrative Support	4,835	4,576	-259	-5.0%	0.70
Installation, Maintenance, and Repair	4,666	4,563	-103	-2.0%	2.61
Transportation and Material Moving	3,949	3,909	-40	-1.0%	1.28
Food Preparation and Serving Related	4,288	3,884	-404	-9.0%	1.04
Sales and Related	3,521	3,483	-38	-1.0%	0.79
Management	2,368	2,347	-21	-1.0%	0.93
Education, Training and Library	1,831	2,017	186	10.0%	0.79
Production	2,103	2,007	-96	-5.0%	0.77
Building and Grounds Cleaning and Maintenance	2,100	1,940	-160	-8.0%	1.18
Personal Care and Service	1,747	1,845	98	6.0%	0.96
Protective Service	1,142	1,277	135	12.0%	1.27
Healthcare Practitioners and Technical	1,284	1,165	-119	-9.0%	0.47
Life, Physical, and Social Science	1,139	1,079	-60	-5.0%	2.94
Architecture and Engineering	1,159	965	-194	-17.0%	1.27
Business and Financial Operations	916	904	-12	-1.0%	0.39
Farming, Fishing, and Forestry	625	670	45	7.0%	2.01
Healthcare Support	631	604	-27	-4.0%	0.50
Community and Social Service	421	459	38	9.0%	0.62
Arts, Design, Entertainment, Sports, and Media	298	282	-16	-5.0%	0.34
Computer and Mathematical	263	263	0	0.0%	0.20
Legal	169	165	-4	-2.0%	0.45
Military-Only	126	121	-5	-4.0%	0.44

*Source: Nevada Governor's Office of Economic Development*

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In both 2013 and 2018, Construction and Extraction was the single largest occupation sector in northeastern Nevada, employing a total of 6,796 individuals in 2013 and employing a total of 6,223 individuals in 2018. However, the total number of individuals employed in the Construction and Extraction occupation sector decreased between 2013 and 2018, decreasing by a total of 573 individuals or -8.0 percent. The location quotient for the Construction and Extraction occupation sector was 3.04 in 2018, indicating that this occupation sector was a net exporter of products and services in 2018. The second largest occupation sector in 2013 and 2018 was Office and Administrative Support, employing a total of 4,835 individuals in 2013 and a total of 4,576 individuals in 2018. The total number of individuals employed in the Office and Administrative Support occupation sector decreased by a total of 103 individuals or -5.0 percent and had a location quotient of just 0.70 in 2018, indicating that this occupation sector was a net importer of related goods and services.

The Installation, Maintenance, and Repair occupation sector was the third largest occupation sector in 2013 and 2018, employing a total of 4,666 individuals in 2013 and a total of 4,563 individuals in 2018, a net decrease of 103 total individuals employed in the occupation sector or -2.0 percent. The location quotient for the Installation, Maintenance, and Repair occupation sector in 2018 was 2.61, indicating that this occupation sector was a net exporter of related goods and services in 2018. Transportation and Material Moving was the fourth largest occupation sector in 2013 and 2018, employing a total of 3,949 individuals in 2013 and a total of 3,909 individuals in 2018, a net decrease of just 40 total individuals employed or -1.0 percent. The location quotient for the Transportation and Material Moving occupation sector was 1.28, indicating that this occupation sector was a net exporter of related goods and services in 2018. Food Preparation and Serving Related was the fifth largest occupation sector in 2013 and 2018, employing a total of 4,288 individuals in 2013 and a total of 3,884 individuals in 2018, a net decrease of 404 total individuals employed or -9.0 percent. The location quotient for the Transportation and Material Moving occupation sector in 2018 was 1.04, indicating that this occupation sector was a net exporter of related goods and services in 2018.

Between 2013 and 2018, only five occupation sectors in northeastern Nevada experienced growth in the total number of individuals employed. In the Education, Training, and Library occupation sector, the total number of individuals employed increased by 186 total individuals or 10.0 percent and in the Personal Care and Service occupation sector, the total number of individuals employed increased by 98 total individuals or 6.0 percent. Between 2013 and 2018, the total number of individuals employed in the Protective Service occupation sector increased by 135 total individuals or 12.0 percent and the total number of individuals employed in the Farming, Fishing, and Forestry occupation sector increased by 45 total individuals or 7.0 percent. In the Community and Social Service occupation sector, the total number of individuals employed increased between 2013 and 2018 by 38 total individuals or 9.0 percent.

Of the 23 occupation sectors listed in Table 6.2, a total of nine occupation sectors had a location quotient greater than 1.0, indicating that they were net exporters of related goods and services. In addition to the Construction and Extraction occupation sector, Installation, Maintenance, and Repair occupation sector, the Transportation and Material Moving occupation sector, and the Food Preparation and Serving Related occupation sector, five other industry sectors had location

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quotients greater than 1.0 in 2018, an indication that these occupation sectors are a net exporter of related goods and services. In 2018, the Building and Grounds Cleaning and Maintenance occupation sector had a location quotient of 1.18 and the Protective Service occupation sector had a location quotient of 1.27. The Life, Physical, and Social Science occupation sector had a location quotient of 2.94 in 2018 and the Architecture and Engineering occupation sector had a location quotient of 1.27 in 2018. The final occupation sector with a location quotient greater than 1.0 in 2018 was the Farming, Fishing, and Forestry occupation sector, with a location quotient of 2.01 in 2018.

#### 6.1.b Export Enhancement and Import Substitution in Northeastern Nevada

The identification and utilization of export enhancement and import substitution within a defined economic region such as the northeastern Nevada area is based upon the practice of identifying and further developing existing and emerging economic clusters. Economic clusters are important to an economic region's overall economic prosperity because further development of the economic cluster tends to increase the overall productivity of individual firms located within the cluster and, as productivity and competition both increase, the pace of innovation which underpins future economic growth is accelerated.

Import substitution involves the identification of various 'gaps' and 'disconnects' that exist amongst firms within an economic cluster and between various economic clusters operating within a defined economic region. A 'gap' occurs if the good or service within the economic cluster is not produced by any firm or industry within the cluster or the economic region. A 'disconnect' occurs because a local industry may exist within the cluster or economic region but is relatively small when compared to other industries, a local industry exists but there are national contracts or certain specifications of product that cannot be produced locally, or it goes unnoted that the industry existed within the cluster or economic region.

Table 6.3 presents the top 15 economic sectors by all exports for northeastern Nevada, including the combined total exports for each economic sector for Elko County, Eureka County, Humboldt County, Lander County, and White Pine County.

In 2018, Gold Ore Mining was the largest exporting economic sector in northeastern Nevada, exporting a combined total of approximately \$3.4 billion and accounting for 54.86 percent of the region's total amount of exports of approximately \$5.3 billion. Support Activities for Oil and Gas Operations was the second largest exporting economic sector, with total exports valued at approximately \$300.7 million and accounting for 4.80 percent of the region's total amount of exports. Hotels and Motels, Including Casino Hotels was the third largest exporting economic sector, with total exports valued at approximately \$283.2 million and Cooper Ore Mining was the fourth largest exporting economic sector, with total exports valued at approximately \$179.0 million. Hotels and Motels, Including Casino Hotels accounted for 4.52 percent of the region's total value of combined exports and Cooper Ore and Mining accounted for 2.86 percent of the region's total value of combined exports in 2018. Electric Power Generation – Fossil Fuel was the fifth largest exporting economic sector in Northeastern Nevada in 2018, with total exports valued at approximately \$168.1 million and accounting for 2.68 percent of the region's total value of combined exports.

**Table 6.3 – Top 15 Economic Sectors by All Exports  
Northeastern Nevada Regional Development Authority  
2018**

TOP 15 ECONOMIC SECTORS BY ALL EXPORTS		
Description	TOTAL EXPORTS	PERCENTAGE OF TOTAL EXPORTS
Gold ore mining	\$3,435,371,569	54.86%
Support activities for oil and gas operations	\$300,682,248	4.80%
Hotels and motels, including casino hotels	\$283,209,286	4.52%
Copper ore mining	\$178,961,545	2.86%
Electric power generation - Fossil fuel	\$168,058,877	2.68%
Lead and zinc ore mining	\$161,529,848	2.58%
Wholesale trade	\$149,288,208	2.38%
Gambling industries (except casino hotels)	\$129,826,616	2.07%
Beef cattle ranching and farming, including feedlots and dual-purpose ranching and farming	\$128,825,339	2.06%
Overhead cranes, hoists, and monorail systems manufacturing	\$85,640,779	1.37%
All other crop farming	\$75,037,097	1.20%
Management of companies and enterprises	\$72,670,155	1.16%
Metal mining services	\$66,196,813	1.06%
Commercial and industrial machinery and equipment repair and maintenance	\$53,836,191	0.86%
Other basic inorganic chemical manufacturing	\$48,721,807	0.78%
<b>TOTAL</b>	<b>\$5,337,856,376</b>	<b>85.24%</b>

*Source: University Center for Economic Development, Nevada Economic Assessment Project*

Table 6.4 presents the top 15 industry sectors by domestic export trade for northeastern Nevada, including the combined total exports for each economic sector for Elko County, Eureka County, Humboldt County, Lander County, and White Pine County.

In 2018, total domestic exports for Gold Ore Mining totaled approximately \$3.2 billion, accounting for 57.59 percent of the approximately \$4.9 billion in combined total value of all domestic exports from northeastern Nevada. In 2018, Hotels and Motels, Including Casino Hotels was the second largest domestic export trade industry sector in northeastern Nevada, with a combined total domestic export value of approximately \$283.2 million and accounting for 5.04 percent of all combined regional domestic export value. Support Activities for Oil and Gas Operations was the third largest domestic export trade industry sector in northeastern Nevada in 2018, with a combined total domestic export value of approximately \$258.0 million and accounting for 4.59 percent of the region's combined domestic export value. Electric Power Generation – Fossil Fuel was the fourth largest domestic export trade industry sector in northeastern Nevada in 2018, with a combined total domestic export value of approximately \$168.1 million and accounting for 2.99 percent of the region's combined domestic export value. Gambling Industries (Except Casino Hotels) was the fifth largest domestic export trade industry sector in Northeastern Nevada in 2018, with a combined total domestic export value of

approximately \$129.8 million and accounting for 2.31 percent of the region’s combined domestic export value.

<b>Table 6.4 – Top 15 Industry Sectors by Domestic Export Trade Northeastern Nevada Regional Development Authority 2018</b>		
TOP 15 INDUSTRY SECTORS BY DOMESTIC EXPORT TRADE		
Economic Sector	Domestic Exports	PERCENTAGE OF TOTAL DOMESTIC EXPORTS
Gold ore mining	\$3,236,142,904	57.59%
Hotels and motels, including casino hotels	\$283,151,304	5.04%
Support activities for oil and gas operations	\$258,029,581	4.59%
Electric power generation - Fossil fuel	\$168,058,877	2.99%
Gambling industries (except casino hotels)	\$129,826,616	2.31%
Beef cattle ranching and farming, including feedlots and dual-purpose ranching and farming	\$128,050,438	2.28%
Copper ore mining	\$121,192,661	2.16%
Lead and zinc ore mining	\$94,311,496	1.68%
Wholesale trade	\$92,257,469	1.64%
Overhead cranes, hoists, and monorail systems manufacturing	\$75,578,482	1.35%
All other crop farming	\$63,508,024	1.13%
Metal mining services	\$55,885,989	0.99%
Management of companies and enterprises	\$54,171,329	0.96%
Commercial and industrial machinery and equipment repair and maintenance	\$53,821,311	0.96%
Electric power transmission and distribution	\$39,995,073	0.71%
TOTAL	\$4,853,981,555	86.38%

*Source: University Center for Economic Development, Nevada Economic Assessment Project*

Table 6.5 presents the top 15 economic sectors by total imports for Northeastern Nevada, including the combined total exports for each economic sector for Elko County, Eureka County, Humboldt County, Lander County, and White Pine County.

In 2018, total imports for all economic sectors in northeastern Nevada totaled approximately \$1.5 billion. Gold Ore Mining was the largest economic sector in 2018, in-terms of total imports, with a combined total import value of approximately \$683.8 million and accounting for 29.31 percent of the combined value of total regional economic sector imports. In 2018, Electric Power Generation – Fossil Fuel was the second largest economic sector in-terms of total imports, with a combined value of approximately \$106.0 million and accounting for 4.54 percent of the combined value of total regional economic sector imports, and Owner-Occupied Dwellings was the third largest economic sector in-terms of total imports, with a combined value of approximately \$91.7 million and accounting for 3.93 percent of the combined value of total regional economic sector imports. Beef Cattle Ranching and Farming (Including Feedlots and Dual-Purpose Ranching and Farming) was the fourth largest economic sector in-terms of total imports, importing a combined value of \$80.4 million in goods and services and accounting for

3.45 percent of the region's combined value of total imports. Hotels and Motels, Including Casino Hotels was the fifth largest economic sector in-terms of total imports, importing a combined value of \$76.9 million in goods and services and accounting for 3.29 percent of the region's combined value of total imports.

<b>Table 6.5 – Top 15 Economic Sectors by Total Imports Northeastern Nevada Regional Development Authority 2018</b>		
TOP 15 ECONOMIC SECTORS BY TOTAL IMPORTS		
ECONOMIC SECTORS	IMPORTS	PERCENTAGE OF TOTAL IMPORTS
Gold ore mining	\$683,807,604	29.31%
Electric power generation - Fossil fuel	\$105,957,512	4.54%
Owner-occupied dwellings	\$91,718,224	3.93%
Beef cattle ranching and farming, including feedlots and dual-purpose ranching and farming	\$80,434,935	3.45%
Hotels and motels, including casino hotels	\$76,884,778	3.29%
Wholesale trade	\$74,185,402	3.18%
Overhead cranes, hoists, and monorail systems manufacturing	\$57,611,800	2.47%
Gambling industries (except casino hotels)	\$52,517,233	2.25%
All other crop farming	\$33,911,250	1.45%
Copper ore mining	\$33,365,351	1.43%
Real estate	\$32,820,061	1.41%
Metal mining services	\$32,286,837	1.38%
Construction of new power and communication structures	\$30,386,075	1.30%
Limited-service restaurants	\$30,368,124	1.30%
Truck transportation	\$29,618,330	1.27%
TOTAL	\$1,445,873,516	61.96%

*Source: University Center for Economic Development, Nevada Economic Assessment Project*

Table 6.6 presents the top 15 commodity sector imports for the Gold Ore Mining economic sector for northeastern Nevada for 2018. These estimates provide a dollar value of the goods and services produced in specific commodity sectors that are imported into northeastern Nevada from other communities and regions located outside northeastern Nevada in order to support the production of goods and services in the Gold Ore Mining economic sector.

In 2018, firms within the Gold Ore Mining economic sector operating in northeastern Nevada imported a total of approximately \$106.3 million in various goods and services from firms located and operating outside northeastern Nevada in the Lime commodity sector, accounting for 15.54 percent of the Gold Ore Mining economic sector's total imports. The Gold Ore Mining economic sector operating in northeastern Nevada imported an additional \$104.8 million in various goods and services in the Refined Petroleum Products commodity sector and an additional \$49.8 million in various goods and services in the Tires commodity sector in 2018

from firms located and operating outside northeastern Nevada. The Gold Ore Mining economic sector operating in northeastern Nevada imported an additional \$47.8 million in various goods and services from firms located and operating outside northeastern Nevada in the Wholesale Trade Distribution Services commodity sector and imported an additional \$41.7 million in various goods and services from firms located and operating outside northeastern Nevada in the Industrial Gases commodity sector.

<b>Table 6.6 – Top 15 Commodity Import Sectors for the Gold Mining Economic Sector Northeastern Nevada Regional Development Authority 2018</b>			
TOP 15 COMMODITY SECTOR IMPORTS for the GOLD MINING SECTOR			
ECONOMIC SECTOR	COMMODITY IMPORTS	PERCENTAGE OF TOTAL COMMODITY IMPORTS	IMPORT TYPE
Lime	\$106,248,953	15.54%	GAP
Refined petroleum products	\$104,772,155	15.32%	GAP
Tires	\$49,828,417	7.29%	GAP
Wholesale trade distribution services	\$47,825,958	6.99%	DISCONNECT
Industrial gases	\$41,734,227	6.10%	GAP
Other basic organic chemicals	\$38,563,421	5.64%	GAP
Mining machinery	\$37,073,309	5.42%	GAP
Conveyor and conveying equipment	\$25,529,523	3.73%	GAP
Construction machinery	\$23,472,052	3.43%	GAP
Legal services	\$22,737,620	3.33%	DISCONNECT
Explosives	\$20,431,170	2.99%	GAP
Petrochemicals	\$12,941,181	1.89%	GAP
Turned products and screws, nuts, and bolts	\$9,300,109	1.36%	GAP
Iron and steel and ferroalloy products	\$8,316,127	1.22%	GAP
Other basic inorganic chemicals	\$7,552,147	1.10%	DISCONNECT
TOTAL	\$556,326,369	81.36%	

*Source: University Center for Economic Development, Nevada Economic Assessment Project*

Table 6.7 presents the top 15 commodity sector imports for the Owner-Occupied Dwellings economic sector for northeastern Nevada for 2018. These estimates provide a dollar value of the goods and services produced in specific commodity sectors that are imported into northeastern Nevada from other communities and regions located outside northeastern Nevada in order to support the production of goods and services in the Owner-Occupied Dwellings economic sector.

In 2018, firms within the Owner-Occupied Dwellings economic sector operating in northeastern Nevada imported a total of approximately \$15.8 million in various goods and services from firms located and operating outside northeastern Nevada in the Real Estate Buying and Selling, Leasing, Managing, and Related Services commodity sector, accounting for 17.18 percent of the Owner-Occupied Dwellings economic sector's total imports. The Owner-Occupied Dwellings economic sector operating in northeastern Nevada imported an additional \$12.3 million in



various goods and services in the Insurance commodity sector and an additional \$10.4 million in various goods and services in the Nondepository Credit Intermediation and Related Activities commodity sector in 2018 from firms located and operating outside northeastern Nevada. The Owner-Occupied Dwellings economic sector operating in northeastern Nevada imported an additional \$8.4 million in various goods and services from firms located and operating outside northeastern Nevada in the Monetary Authorities and Depository Credit Intermediation commodity sector and imported an additional \$6.0 million in various goods and services from firms located and operating outside northeastern Nevada in the Legal Services commodity sector.

<b>Table 6.7 – Top 15 Commodity Import Sectors for the Owner-Occupied Dwellings Economic Sector Northeastern Nevada Regional Development Authority 2018</b>			
TOP 15 COMMODITY SECTOR IMPORTS for the OWNER-OCCUPIED DWELLINGS SECTOR			
SECTOR	IMPORTS	PERCENTAGE OF TOTAL COMMODITY IMPORTS	TYPE OF IMPORT
Real estate buying and selling, leasing, managing, and related services	\$15,760,211	17.18%	DISCONNECT
Insurance	\$12,341,662	13.46%	DISCONNECT
Nondepository credit intermediation and related activities	\$10,438,060	11.38%	DISCONNECT
Monetary authorities and depository credit intermediation	\$8,435,174	9.20%	DISCONNECT
Legal services	\$5,972,021	6.51%	DISCONNECT
Services to buildings	\$4,406,531	4.80%	DISCONNECT
Landscape and horticultural services	\$3,348,899	3.65%	DISCONNECT
Maintained and repaired residential structures	\$2,804,444	3.06%	DISCONNECT
Wood kitchen cabinets and countertops	\$2,411,401	2.63%	DISCONNECT
Architectural, engineering, and related services	\$2,226,293	2.43%	DISCONNECT
Wholesale trade distribution services	\$1,523,174	1.66%	DISCONNECT
Other plastics products	\$1,127,448	1.23%	DISCONNECT
Computer systems design services	\$1,039,024	1.13%	DISCONNECT
Wood windows and doors	\$908,150	0.99%	GAP
Other computer related services, including facilities management services	\$828,381	0.90%	DISCONNECT
TOTAL	\$73,570,875	80.21%	

*Source: University Center for Economic Development, Nevada Economic Assessment Project*

Table 6.8 presents the top 15 commodity sector imports for the Beef Ranching economic sector for northeastern Nevada for 2018. These estimates provide a dollar value of the goods and services produced in specific commodity sectors that are imported into northeastern Nevada from other communities and regions located outside northeastern Nevada in order to support the production of goods and services in the Beef Ranching economic sector.

In 2018, firms within the Beef Ranching economic sector in northeastern Nevada imported a total of approximately \$18.9 million in various goods and services from firms located and operating outside northeastern Nevada in the Other Animal Food commodity sector, accounting for 23.46 percent of the Beef Ranching economic sector's total imports. The Beef Ranching economic sector operating in northeastern Nevada imported an additional \$14.8 million in various goods and services in the Beef Cattle commodity sector and an additional \$8.2 million in



various goods and services in the Refined Petroleum Products commodity sector in 2018 from firms located and operating outside northeastern Nevada. The Beef Ranching economic sector operating in northeastern Nevada imported an additional \$7.0 million in various goods and services from firms located and operating outside northeastern Nevada in the Grains commodity sector and imported an additional \$6.4 million in various goods and services from firms located and operating outside northeastern Nevada in the Wholesale Trade Distribution Services commodity sector.

**Table 6.8 – Top 15 Commodity Import Sectors for the Beef Ranching Economic Sector  
Northeastern Nevada Regional Development Authority  
2018**

TOP 15 COMMODITY SECTOR IMPORTS for the BEEF RANCHING SECTOR			
SECTOR	IMPORTS	PERCENTAGE OF TOTAL COMMODITY IMPORTS	TYPE OF IMPORT
Other animal food	\$18,871,871	23.46%	GAP
Beef cattle	\$14,837,208	18.45%	DISCONNECT
Refined petroleum products	\$8,241,019	10.25%	GAP
Grains	\$7,002,678	8.71%	DISCONNECT
Wholesale trade distribution services	\$6,387,308	7.94%	DISCONNECT
Support activities for agriculture and forestry	\$4,618,627	5.74%	DISCONNECT
Spring and wire products	\$4,520,954	5.62%	GAP
Truck transportation services	\$2,685,130	3.34%	DISCONNECT
Real estate buying and selling, leasing, managing, and related services	\$2,181,710	2.71%	DISCONNECT
Biological products (except diagnostic)	\$1,016,308	1.26%	GAP
Pesticides and other agricultural chemicals	\$867,487	1.08%	GAP
Monetary authorities and depository credit intermediation	\$856,598	1.06%	DISCONNECT
Water transportation services	\$744,886	0.93%	DISCONNECT
Noncomparable imports	\$703,219	0.87%	GAP
Pharmaceuticals	\$695,829	0.87%	DISCONNECT
TOTAL	\$74,230,832	92.29%	

*Source: University Center for Economic Development, Nevada Economic Assessment Project*

Table 6.9 presents the top 15 commodity sector imports for the Hotels and Motels, Including Casino Hotels economic sector for northeastern Nevada for 2018. These estimates provide a dollar value of the goods and services produced in specific commodity sectors that are imported into northeastern Nevada from other communities and regions located outside northeastern Nevada in order to support the production of goods and services in the Hotels and Motels, Including Casino Hotels economic sector.

In 2018, firms within the Hotels and Motels, Including Casino Hotels economic sector in northeastern Nevada imported a total of approximately \$12.1 million in various goods and services from firms located and operating outside northeastern Nevada in the Advertising, Public Relations, and Related Services commodity sector, accounting for 15.79 percent of the Hotels

and Motels, Including Casino Hotels economic sector's total imports. The Hotels and Motels, Including Casino Hotels economic sector imported an additional \$4.3 million in various goods and services in the Insurance commodity sector and an additional \$4.2 million in various goods and services in the Blank Magnetic and Optical Recording Media commodity sector in 2018 from firms located and operating outside northeastern Nevada. The Hotels and Motels, Including Casino Hotels economic sector operating in northeastern Nevada imported an additional \$4.0 million in various goods and services from firms located and operating outside northeastern Nevada in the Real Estate Buying and Selling, Leasing, Managing, and Related Services commodity sector and imported an additional \$2.3 million in various goods and services from firms located and operating outside northeastern Nevada in the Refined Petroleum Products commodity sector.

**Table 6.9 – Top 15 Commodity Import Sectors for the Hotels and Motels, Including Casino Hotels Economic Sector  
Northeastern Nevada Regional Development Authority  
2018**

TOP 15 COMMODITY SECTOR IMPORTS for the HOTELS and MOTELS , INCLUDING CASINO HOTELS SECTOR			
SECTOR	IMPORTS	PERCENTAGE OF TOTAL COMMODITY IMPORTS	TYPE OF IMPORT
Advertising, public relations, and related services	\$12,141,684	15.79%	DISCONNECT
Insurance	\$4,321,282	5.62%	DISCONNECT
Blank magnetic and optical recording media	\$4,196,779	5.46%	GAP
Real estate buying and selling, leasing, managing, and related services	\$4,006,933	5.21%	DISCONNECT
Refined petroleum products	\$2,256,993	2.94%	GAP
Management consulting services	\$2,241,459	2.92%	DISCONNECT
Management of companies and enterprises	\$1,988,302	2.59%	DISCONNECT
Nondepository credit intermediation and related activities	\$1,893,800	2.46%	DISCONNECT
Noncomparable imports	\$1,773,002	2.31%	GAP
Printed materials	\$1,648,118	2.14%	DISCONNECT
Paper from pulp	\$1,578,108	2.05%	GAP
Paper bags and coated and treated paper	\$1,565,036	2.04%	GAP
Wholesale trade distribution services	\$1,447,688	1.88%	DISCONNECT
Electricity transmission and distribution	\$1,301,702	1.69%	DISCONNECT
Other fabricated metals	\$1,219,001	1.59%	DISCONNECT
TOTAL	\$43,579,887	56.68%	

Source: University Center for Economic Development, Nevada Economic Assessment Project

## 6.2 Identifying Demand Conditions, Factor Conditions, Firm Strategy, Rivalry and Composition, and Related and Supporting Industries

Participants who participated in the first regional strategic economic development planning workshop held on October 3, 2019 and October 4, 2019 were asked to identify the specific demand conditions, factor conditions, firm strategy, rivalry and composition, and related and

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supporting industries for northeastern Nevada using the industry sector and occupation sector and economic sector and commodity sector data presented in the previous sub-section. As part of Stronger Economies Together Module 3, *Focusing on Regional Competitive Advantage*, workshop participants were asked to answer four separate questions, including:

- What demand conditions exist in the Northeastern Nevada Regional Development Authority region?
- What factor conditions exist (or do not exist) in the Northeastern Nevada Regional Development Authority region?
- What is the composition of individual industry sectors in the Northeastern Nevada Regional Development Authority region?
- Which industries buy and sell from each other in the Northeastern Nevada Regional Development Authority region? What strong value chains exist in the Northeastern Nevada Regional Development Authority region?

Demand conditions are defined as the conditions that influence demand for goods or services produced in a defined region. Workshop participants identified a number of existing demand conditions both within northeastern Nevada and outside northeastern Nevada that could potential impact the area's existing and emerging competitive advantage. The region's aging population, relatively high and continually growing median household income, median family income, and per capita income, and continued growth in individual wages paid in critical industry and occupation sectors continue to help grow overall demand for additional goods and services among consumers within northeastern Nevada. Continued growth of the national economy, as well as emerging opportunities in foreign markets, also continue to help grow overall demand for additional goods and services produced and provided by individual firms operating within northeastern Nevada. Firms operating within northeastern Nevada's primary industry sectors, including the Mining, Quarrying, and Oil and Gas Extraction industry sector, Accommodation and Food Services industry sector, Wholesale Trade industry sector, and the Agriculture, Forestry, Fishing and Hunting industry sector, could potentially benefit and see increased demand for their goods and services given continued growth in national and foreign markets.

Factor conditions are defined as existing infrastructure, resources and materials, and workforce characteristics that can either be improved or used to support the expansion and growth of specific industry sectors. In regard to existing infrastructure, workshop participants noted that northeastern Nevada is centrally located between several fast-growing urban and metropolitan regions including the Reno-Sparks Metropolitan Statistical Area (northwestern Nevada), the Las Vegas Valley Metropolitan Statistical Area (southern Nevada), the Twin Falls Metropolitan Statistical Area (southern Idaho), and the Salt Lake City Metropolitan Statistical Area (Utah) and the existence of a well-developed transportation network to and from these urban and metropolitan regions is advantageous for firms operating within a number of industry and occupation sectors in northeastern Nevada. Firms within the Retail Trade industry sector, the Wholesale Trade industry sector, and the Manufacturing industry sector and firms within the Transportation and Material Moving occupation sector and Production occupation sector all

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benefit from the existing geographic location of the region and from the region's well-developed transportation infrastructure already in place.

Other critical factor conditions, as identified by workshop participants, include the region's abundant deposits of precious metals and industrial minerals. Firms within the Mining, Quarrying, and Oil and Gas Extraction industry sector and the Construction and Extraction occupation sector have historically benefited from these factor conditions and new discoveries of significant deposits of rare earth metals presents a number of opportunities for existing firms as well as for new firms in other industry and occupation sectors including the Manufacturing industry sector, Utilities industry sector, Transportation and Material Moving occupation sector, and the Production occupation sector. Continued national and foreign market economic growth, coupled with the relatively skilled workforce already in place in northeastern Nevada, represent additional factor conditions that could aid in the further growth and expansion of the region's existing economic base.

Firm strategy, rivalry, and composition is generally defined as the community's and/or region's portfolio of businesses, entrepreneurial activity and support, and general mix of businesses. Overall, workshop participants noted that firms operating in the Mining, Quarry, and Oil and Gas Extraction industry sector and the Construction and Extraction occupation sector dominate the region's overall mix of existing businesses. As large firms within these industry and occupation sectors monopolize the existing pool of available workers, growth in other industry and occupation sectors is often artificially limited and entrepreneurial activity is suppressed. However, workshop participants did note that new business and entrepreneurial start-ups have begun to fill 'gaps' and 'disconnects' that exist within the region's total economic base by producing goods and services for the area's existing mining and natural resource extraction firms and for individual farming and ranching agricultural producers operating throughout the region. Further growth of the region's total economic base, through expansion of the region's existing portfolio of businesses and through increased entrepreneurial activity and support, can be helped by capturing the existing importation of various goods and services from firms operating outside northeastern Nevada in a variety of commodity sectors.

Workshop participants further noted that firms in the Accommodation and Food Services industry sector, Retail Trade industry sector, Agriculture, Forestry, Fishing and Hunting industry sector, and the Arts, Entertainment, and Recreation industry sector have historically benefited from the region's existing mix of various outdoor recreation assets. Critical firm strategy, rivalry, and composition conditions lacking from the region's existing portfolio of businesses are additional firms operating in various commodity sectors that currently import various goods and services from outside the region to firms within the Hotels and Motels, Including Casino Hotels economic sector in northeastern Nevada. Workshop participants noted that the various industry sectors related to outdoor recreation and tourism represent a significant portion of the region's overall economic base. Further creation and attraction efforts designed to fill these 'gaps' and 'disconnects' can further enhance the region's existing economic base.

Related and supporting industries are defined as the firms within and between industries that buy and sell from each other. Specifically, the related and supporting industries form both the upstream and downstream elements of and links throughout the region's overall value chain.

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Certain ‘holes’, or ‘gaps’ and ‘disconnects’, within the region’s overall value chain, as identified by workshop participants, include firms that can provide basic goods and services to a variety of the region’s existing primary industry and occupation sectors and clusters. Additional printing services, office supplies, logistical and transportation services, telecommunication and broadband services, housing services, and banking services can help fill these ‘gap’s and ‘disconnects’ by providing various goods and services to a number of the region’s primary industry and occupation sectors while also providing various goods and services needed to support a growing population.

Smaller and midsized manufacturers, that can produce component parts and equipment, can be sold directly to firms within the Mining, Quarrying, and Oil and Gas Extraction industry sector and to firms within the Agriculture, Forestry, Fishing and Hunting industry sector. Eventually, as a workforce trained in component part and equipment manufacturing is developed, new smaller and midsized manufacturers may begin to emerge throughout the region that can export finished component parts and equipment to firms in other industry and occupation sectors located in external markets throughout the western and intermountain western United States. Continued economic growth in the neighboring urban metropolitan regions, such as the Reno-Sparks Metropolitan Statistical Area (northwestern Nevada), the Las Vegas Valley Metropolitan Statistical Area (southern Nevada), the Twin Falls Metropolitan Statistical Area (southern Idaho), and the Salt Lake City Metropolitan Statistical Area (Utah), also present opportunities for smaller and midsized manufacturers that can be located in northeastern Nevada and the finished component parts and equipment can then be shipped to firms within these neighboring urban population centers and metropolitan regions.

### **6.3 Identifying Opportunities in Specific Regional Industry and Occupation Clusters**

Participants who participated in the first regional strategic economic development planning workshop were asked to identify specific industry and occupation clusters that the Northeastern Nevada Regional Development Authority, as part of its new five-year Comprehensive Economic Development Strategy, should explore further, should avoid investing in for the future, could be viable future community and regional industry and occupation sectors, and are declining but may be worth reviving. As part of Stronger Economies Together Module 3, *Focusing on Regional Competitive Advantage*, workshop participants were asked to answer four separate questions, including:

- What industries within your region seem worth exploring further?
- What industries within your region should the region avoid investing in the future?
- What industries may be viable future regional industries?
- What industries are declining in your region but may be worth reviving?

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The following is a summary of the various industry and occupation sectors and economic and commodity sectors that workshop participants identified as worth exploring, that future investment in should be avoided, the may become viable industry and occupation sectors and economic and commodity sectors for the region's future, and that are currently declining but could potentially be revived.

### 6.3.a Industry and Occupation Sectors and Economic and Commodity Sectors Worth Exploring

Workshop participants identified a number specific industry sectors and areas that are worth further exploration and development by the Northeastern Nevada Regional Development Authority as part of its new five-year Comprehensive Economic Development Strategy. Initially, workshop participants noted that the Retail Trade industry sector, Construction industry sector, Wholesale Trade industry sector, and the Arts, Entertainment, and Recreation industry sector each had location quotients in 2018 that were close to 1.0, with location quotients of 0.90, 0.92, 0.89, and 0.97 respectively. With additional investment, workshop participants suggested that these four industry sectors could potentially be grown into net exporters instead of net importers of various related goods and services. Other industry sectors, as identified by workshop participants that merit further exploration, included the Transportation and Warehousing industry sector and the Manufacturing industry sector given their natural connections to other primary base industry and occupation sectors within the region. Workshop participants noted that the region's existing Mining, Quarry, and Oil and Gas Extraction industry sector suffers from a number of 'leaks', or 'gaps' and 'disconnects', throughout its supply and value chain as does much of the region's Agriculture, Forestry, Fishing, and Hunting industry sector. Possible development of these related industry sectors may help fill these 'gaps' and 'disconnects' and create additional positive economic value for the region.

Further exploration of possible investment in the Education, Training, and Library occupation sector and Healthcare and the Social Assistance industry sector may be needed in order to support the region's growing population and address a number of the various socio-demographic and economic trends emerging throughout northeastern Nevada including an aging population, growth in the civilian workforce that is not keeping pace with the growth in demand for new employees, and growth in the overall skill set of the region's existing civilian workforce that is not keeping pace with the growth in demand for mid to high skilled workers. Addressing these critical issues through possible future investment in these occupation and industry sectors, may also lead to the ability of the region to capture national and international growth in emerging industry sectors including, both not limited to, health and medical products and services, innovations in logistics and operations management, and aerospace and defense component part and equipment manufacturing and testing.

### 6.3.b Industry and Occupation Sectors and Economic and Commodity Sectors to be Avoided for Future Investment

Of the various industry and occupation sectors and economic and commodity services that workshop participants identified as sectors that additional future investment in should be avoided, workshop participants typically identified individual sectors and interest areas that exhibited relatively low growth (or significant decline) in employment over the last several

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years, that had relatively low location quotients, or paid generally low wages. Of the industry and occupation sectors that met these criteria, workshop participants identified five industry or occupation sectors, including the Professional, Scientific, and Technical Services industry sector, the Finance and Insurance industry sector, the Administration and Support and Waste Management and Remediation Services industry sector, the Management occupation sector, and the Manufacturing industry sector. Unless there is a direct tie to the region's existing primary industry and occupation sectors and a specific 'gap' or 'disconnect' within the region's existing primary economic sectors that can be filled with a targeted investment, future investment in these five industry or occupation sectors should be generally avoided.

Within the larger Accommodation and Food Services industry sector and the Arts, Entertainment, and Recreation industry sector, workshop participants noted that future investment in gaming-related tourism and recreation should be avoided. Continued legalization of casino gambling throughout the United States and in several foreign markets has disrupted the once strong monopoly Nevada had on gaming-related tourism. Within northeastern Nevada, gaming-related tourism and recreation, while critical for a number of key communities within the region, is no longer a key driver in either the Accommodation and Food Services industry sector or in the Arts, Entertainment, and Recreation industry sector. Workshop participants did note, however, that the existing investments that have been made in the region's gaming-related tourism and recreation assets within specific communities should be maintained and further built upon but that, for other communities where gaming-related tourism and recreation assets do not represent a significant existing investment, further investment should be placed on non-gaming tourism and recreation activities.

### 6.3.c Industry and Occupation Sectors and Economic and Commodity Sectors that may be Viable in the Future

Targeted industry and occupation sectors and economic and commodity sectors that workshop participants indicated may be viable as drivers of economic activity in northeastern Nevada, that have a current location quotient at or near 1.0 and/or pay relatively high salary levels, include the Utilities industry sector, the Mining, Quarrying, and Oil and Gas Extraction industry sector, the Wholesale Trade industry sector, the Transportation and Warehousing industry sector, and the Government industry sector. These industry sectors are either currently viable or may become viable as primary drivers of economic activity within northeastern Nevada. Specifically, in regard to the Mining, Quarrying, and Oil and Gas Extraction industry sector, workshop participants noted a number of 'gaps' and 'disconnects' where firms within this industry sector import a number of related products and services to support ongoing operations within the region. Additional investment in the Computer and Mathematical occupation sector and Manufacturing industry sector may help close these 'gaps' and 'disconnects' leading to new business creation and new emerging industry and occupation sector development.

Investment in the Health Care and Social Assistance industry sector, the Education Services industry sector, Utilities industry sector, and the Arts, Entertainment, and Recreation industry sector could potentially spur new business creation and start-ups that can begin to provide products and services to the region's growing population and help meet the needs for the development of highly skilled workforce capable of supplying the demand for skilled workers

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existing and new businesses already have. New crops and methods of production could further help grow and diversify the region's existing Agriculture, Forestry, Fishing, and Hunting industry sector and continued support of the Arts, Entertainment, and Recreation industry sector, through improved investment and development of the Accommodation and Food Services industry sector and Retail Trade industry sector, can further establish northeastern Nevada as a major regional, national, and even international destination area for a variety of gaming-based and non-gaming based tourism and recreation.

#### 6.3.d Industry and Occupation Sectors and Economic and Commodity Sectors in Decline but Worth Reviving

While the Educational Services industry sector, the Transportation and Warehousing industry sector, and the Health Care and Social Assistance industry sector have each seen either decline in the number of jobs created within the industry sector or stubbornly low location quotients, indicating that the industry sector has remained a net importer of various products and services, workshop participants noted that each of these industry sectors is worth reviving with additional investment and focus. Specifically, workshop participants noted that the Educational Services industry sector and the Health Care and Social Assistance industry sector both provide needed products and services that serve the region's growing population and that the Transportation and Warehousing industry sector serves the interests of other critical industry and occupation sectors and could be better positioned to take advantage of the region's central geographic location and existing transportation infrastructure. The Construction industry sector and the Retail Trade industry sector were also identified by workshop participants as industry sectors worth reviving in order to serve a growing population and to fill key 'gaps' and 'disconnects' in existing and emerging regional economic clusters.

Workshop participants further noted that reviving existing small and locally owned and operated businesses and promoting new entrepreneurial start-up efforts is vital to the long-term economic health of northeastern Nevada. Specifically, workshop participants suggested that the Northeastern Nevada Regional Development Authority, in partnership with other various organizations, agencies, and key private sector firms, develop targeted small business and entrepreneurial start-up programs and initiatives that would operate to serve existing firms or would fill existing 'gaps' and 'disconnects' in the Retail Trade industry sector and the Agriculture, Forestry, Fishing and Hunting industry sector. New landscaping firms, pest control firms, and small equipment rental firms are needed throughout the region and, specifically, within the region's existing largest population centers. New technology, production processes, conservation practices, and new crop production opportunities represent a series of possible entrepreneurial start-up opportunities that could help grow key elements of the region's Agriculture, Forestry, Fishing and Hunting industry sector. Workshop participants noted, however, that the Northeastern Nevada Regional Development Authority should pursue the development of these targeted small business and entrepreneurial start-up efforts in partnership with organizations and entities that already have the technical experience in small business and entrepreneurial based economic development strategies.



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## 6.4 Identification of Existing Economic Leakages within the Regional Economy and the Potential for Responding to these Opportunities

As part of Stronger Economies Together Module 4, *Exploring Strategies for Enhancing the Regional Economy*, participants who participated in the first regional strategic economic development planning workshop held on October 3, 2019 and October 4, 2019 were asked to evaluate and identify existing economic leakages in existing industry and occupation sectors and select economic and commodity sectors and evaluate the potential for responding to these opportunities. Workshop participants, as part of Stronger Economies Together Module 4, were also asked to develop a set of preliminary strategies that could be further developed and incorporated into the Northeastern Nevada Regional Development Authority's new five-year Comprehensive Economic Development Strategy.

In developing the preliminary set of strategies for the Northeastern Nevada Regional Development Authority's new five-year Comprehensive Economic Development Strategy, workshop participants identified 11 separate industry sectors or areas in which individual economic leakages were present. Once the area of economic leakage had been identified, workshop participants then identified the overall capacity of the region to respond to the identified leakage and the potential economic development and economic growth opportunity that exists for the region for each area of economic leakage. These identified industry sector or area economic leakages were used to build elements of the various strategic economic development goals and objectives introduced in Section 7.0 of this University Center for Economic Development technical report.

The following is a list of the 11 separate industry sectors or areas in which an existing economic leakage had been identified. While some duplication may exist, each of these 11 separate industry sectors or areas were developed by individual small groups during the regional strategic economic development planning workshop held on October 3, 2019 and October 4, 2019. While some duplication in the industry sector or area is evident, each individual small group identified unique capacity and potential growth opportunities for each individual industry sector or area.

- ***Construction***

Workshop participants noted a significant existing economic leakage in the Construction industry sector, noting that residential and non-residential construction projects undertaken in communities located throughout northeastern Nevada typically rely on construction workers and building materials that are imported into the region from surrounding urban and metropolitan areas including the Reno-Sparks Metropolitan Statistical Area in northwestern Nevada, the Twin Falls Metropolitan Statistical Area in southern Idaho, and the Salt Lake City Metropolitan Statistical Area in Utah. In order to close this economic leakage, workshop participants noted that the continued development of various trade and vocational schools and training programs in northeastern Nevada will be needed. Continued population growth and overall economic growth in northeastern Nevada represents a significant opportunity for the region to further grow its own Construction industry sector and improve the level of trade and vocational skills of northeastern Nevada's existing civilian workforce.

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- ***Healthcare***

The continued growth of the region's population coupled with the overall aging of the region's population has led to increased demand for various healthcare services throughout northeastern Nevada. However, potential capture and provision of these services in the Health Care and Social Assistance industry sector have historically leaked and continue to leak to surrounding urban and metropolitan areas including the Reno-Sparks Metropolitan Statistical Area in northwestern Nevada, the Twin Falls Metropolitan Statistical Area in southern Idaho, and the Salt Lake City Metropolitan Statistical Area in Utah. While various healthcare and social assistance providers already operating throughout northeastern Nevada have already significantly expanded their product and service offerings, additional capacity to meet growing and future levels of demand will be needed. Critical community healthcare and social assistance infrastructure will be needed to meet these growing and future levels of increased demand as the region's population continues to grow and age.

- ***Small Business and Service for Individuals***

While small business development has been well served by various organizations and partnerships that already exist throughout northeastern Nevada, workshop participants generally agreed that a more coordinated effort to support small business and entrepreneurial-based creation, attraction, retention, and expansion is needed in order to further close and capture various economic leakages that exist across various industry and occupation sectors and areas throughout northeastern Nevada. Workshop participants generally agreed that the region's overall capacity to provide technical assistance to small businesses in the region is relatively high but that the region's overall capacity to provide financial assistance to small businesses is relatively low. As part of the new five-year Comprehensive Economic Development Strategy for the Northeastern Nevada Regional Development Authority, workshop participants expressed a strong interest in developing new financial resources designed to support the creation, attraction, retention, and expansion of small businesses and entrepreneurs in northeastern Nevada. Workshop participants further noted the need for additional engagement with other organizations and agencies engaged in small business and entrepreneurial-based economic development including, but not limited to, the Ozmen Center for Entrepreneurship at the University of Nevada, Reno and Entrepreneurs Assembly located in Reno, Nevada.

- ***Large Scale Recreation and Arts***

The Arts, Entertainment, and Recreation industry sector remained stagnant in-terms of employment opportunity growth between 2013 and 2018 and workshop participants noted that large scale recreation and arts opportunities have largely been ignored and not invested in. Workshop participants further noted that future investment into large scale recreation and arts opportunities could significantly help in maintaining and improving the relatively high quality of life that already exists throughout northeastern Nevada and the relatively strong recreation and arts community already present in the region. While

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there is significant potential for further growth in the Arts, Entertainment, and Recreation industry sector, workshop participants noted the need for additional coordination and development of large scale recreation and arts opportunities among the various convention, visitors, and tourism authorities, Chambers of Commerce, community associations, school districts, and municipal and county governments that already operate within the region. Workshop participants suggested that, as part of its new five-year Comprehensive Economic Development Strategy, the Northeastern Nevada Regional Development Authority can serve as a coordinating agency in identifying, developing, and implementing new large scale recreation and arts opportunities designed to serve existing residents, future residents, and visitors to the region.

- ***Education***

While workshop participants noted that the region's existing primary and public education system, administered by the various school districts operating within northeastern Nevada, provides exceptional general public education and advanced Career and Technical Education (CTE), workshop participants noted a growing need for continuing education and training in a variety of specialty and professional fields. Additional training and professional development needs are typically filled by educational organizations and training programs located in the surrounding urban and metropolitan areas including the Reno-Sparks Metropolitan Statistical Area in northwestern Nevada, the Twin Falls Metropolitan Statistical Area in southern Idaho, and the Salt Lake City Metropolitan Statistical Area in Utah. Workshop participants noted that, by using existing public education services and existing advanced Career and Technical Education programs that already exist within the region, additional advanced training, professional development, and certification programs can be developed to address critical education needs within the region.

- ***Healthcare***

As already mentioned, many of the more advanced healthcare services that the region's population is in need of are provided by healthcare providers in the surrounding urban and metropolitan areas including the Reno-Sparks Metropolitan Statistical Area in northwestern Nevada, the Twin Falls Metropolitan Statistical Area in southern Idaho, and the Salt Lake City Metropolitan Statistical Area in Utah. Workshop participants identified a number of specialty care areas that could potentially be captured by existing regional healthcare providers including, but not necessarily limited to, pediatrics, oncology, gynecology, emergency and trauma services, advanced surgical services for both emergency and scheduled procedures, and Opioid Substitution Therapy. While workshop participants noted that significant additional financial investment will be needed in order to expand existing healthcare services within the region to cover these and other specialty and advanced care areas, the region's growing population coupled with growing healthcare concerns has led to a significant increase in the demand for these services. The Northeastern Nevada Regional Development Authority can serve as an advocacy group for the needed resources to expand the region's healthcare services.

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- ***Retail***

Workshop participants unanimously agreed that the region's Retail Trade industry sector is one of the region's largest industry sectors and areas for economic leaks. While the region's overall population has continued to grow, the growth in various retailers within the Retail Trade industry sector has largely lagged and is not currently sufficient to meet current and future demand for various retail products and services. As a result of this mismatch between existing levels of retail product and service demand and retail product and service supply, a significant portion of potential retail dollars makes its way to the surrounding urban and metropolitan areas including the Reno-Sparks Metropolitan Statistical Area in northwestern Nevada, the Twin Falls Metropolitan Statistical Area in southern Idaho, and the Salt Lake City Metropolitan Statistical Area in Utah. While there is certainly a strong correlation between population growth and retail development, a renewed focus on creating, attracting, retaining, and expanding new and existing retailers throughout the region should be a priority for the new Comprehensive Economic Development Strategy for the Northeastern Nevada Regional Development Authority. Incorporating small business and entrepreneurial-based economic development strategies, combined with continued focus on warehousing and infrastructure development, could significantly improve the region's overall retail landscape and help capture the retail leakage that exists throughout the region.

- ***Gas and Food Services***

As part of the economic leakage identified for the region's Retail Trade industry sector, workshop participants specifically singled out various gas and food services as an area in which possible economic leakage could be captured and ultimately kept within the region through additional focused development. The Arts, Entertainment, and Recreation industry sector is a significant part of the region's overall economic base and the region's tourism sector benefits from the various natural resources, assets, and amenities that exist throughout northeastern Nevada. As part of the effort to further grow and expand the Arts, Entertainment, and Recreation industry sector and the Retail Trade industry sector, workshop participants noted that there is a considerable opportunity to expand existing gas and food service offerings within select communities located throughout northeastern Nevada. Targeted investment in creating additional gas and food services in select communities within the region should be incorporated into any strategy designed to improve spending per capita of individual tourists and visitors that choose to visit and recreate within northeastern Nevada.

- ***Food Distribution and Packaging***

As has already been mentioned throughout this section, the Agriculture, Forestry, Fishing and Hunting industry sector in northeastern Nevada is one of the region's primary economic sectors. In 2018, the location quotient for the Agriculture, Forestry, Fishing and Hunting industry sector was 2.22, indicating that the industry sector as a whole was a significant net exporter of related products and services. While this industry sector is already a net exporter and significant contributor to the overall health and growth of the

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region's total economic base, workshop participants noted critical specific leakages within the industry sector in food distribution and packaging. Workshop participants noted that very few final agricultural products are actually produced within northeastern Nevada and final production and distribution of final products to end users and consumers is usually completed in larger urban and metropolitan areas located outside the region. Increased investment in alternative agriculture and the processing and use of hemp in final products and the development of a region-wide meat processing facility are two specific ways in which workshop participants suggested that existing economic leakage within the Agriculture, Forestry, Fishing and Hunting industry sector can be recaptured and kept within the region.

- ***Mentoring, Internships, and Alternative Education***

Workshop participants noted that, despite continued economic growth within the region and the continued provision of excellent primary and professional development education opportunities already available within the region, there has been no coordinated effort to create new and expand upon existing mentoring and internship opportunities especially for individuals living in the region who are entering the workforce. The region's youth population, those individuals moving from childhood to young adulthood, often seek mentoring and internship opportunities in a variety of industry sectors and economic areas that exist outside the region. As a result of this trend, this young population may not return to northeastern Nevada when their mentoring and internship is completed resulting in further constriction of the region's overall civilian workforce. Workshop participants noted a significant opportunity, especially within the region's key industry sectors of Mining, Quarrying, and Oil and Gas Extraction, Health Care and Social Assistance, Transportation and Warehousing, and Agriculture, Forestry, Fishing and Hunting, to create new mentoring and internship programs within the region. As individuals complete these mentoring and internship opportunities, further efforts must be made to place them in employment positions within these key industry sectors within the region.

- ***Other Areas of Economic Leakage, Capacity, and Opportunity***

In addition to the specific areas of economic leakage outlined above, workshop participants noted general leakage in four additional areas, including the Retail Trade industry sector, the Arts, Entertainment, and Recreation industry sector, the Healthcare and Social Assistance industry sector, and the Wholesale Trade industry sector. In regard to the Retail Trade industry sector, continued population growth and economic growth is creating additional demand and additional disposable income that could potentially support further growth of various retail product and service providers. In regard to the Arts, Entertainment, and Recreation industry sector, further coordinated promotion of existing outdoor recreation activities and assets, professional outdoor sporting events, and outdoor recreation-based tourism events could be supported with additional investment and done in concert with existing gaming and casino-based tourism in order to build upon the assets that already exist within the region. As already mentioned throughout this subsection, the region's growing population has led to significant increases in the demand for

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various advanced and specialty healthcare services. The expansion and use of rural clinics and the development of telemedicine services could potentially capture the demand for these advanced and specialty healthcare services. Finally, in regard to the Wholesale Trade industry sector, many of the region's existing large employers and firms purchase component parts, materials, supplies, and other inputs of production from wholesale trade providers located and operating outside northeastern Nevada. Targeted creation and attraction strategies could help capture this economic leakage that exists in several of the region's primary industry sectors.

Further development of the strategies suggested by workshop participants for each of these 11 areas of economic leakage will be needed in order to close existing 'gaps' and 'disconnects' that exist within and between several of the region's primary and secondary industry and economic sectors. As part of this new five-year Comprehensive Economic Development Strategy, annual evaluation of the current state of these economic leakages will be needed in order to further refine the region's approach for capturing the various financial and non-financial resources that currently leave northeastern Nevada.

## 6.5 Broader Regional Conditions Based on Industry and Occupation Sector Trends

As part of Stronger Economies Together Module 3, *Focusing on Regional Competitive Advantage* and as part of Stronger Economies Together Module 4, *Exploring Strategies for Enhancing the Regional Economy*, participants, working in small groups and who attended the first regional strategic economic development planning workshop on October 3, 2019 and October 4, 2019, were asked to identify a set of specific conditions based upon the various industry and occupation sector and economic and commodity sector data presented in this section. Using the industry and occupation sector and economic and commodity sector data presented for Stronger Economies Together Module 3 and Module 4, workshop participants were asked to answer the following five questions:

- What *conditions* does the data describe?
- What *direction* of change does the data describe?
- What is the *intensity* of that change?
- How does the region *compare* with communities within the region, the state, nationally?
- What *overall picture* does the data paint?

Nine specific conditions were identified for northeastern Nevada. While several of the small groups focused on similar industry and occupation sector and economic and commodity sector conditions, each individual group provided a unique take on the impact that the trend would have on northeastern Nevada's overall economic base. In some cases, the individual conditions identified by the individual small groups were combined.

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#### 6.5.a Condition 1: Internet and Broadband Telecommunications

Generally poor, or unreliable, broadband and Internet connectivity and availability throughout northeastern Nevada was a primary condition impeding overall economic growth as identified by workshop participants. Workshop participants generally agreed that the lack of high quality, high speed, and reliable broadband and Internet connectivity and availability has also negatively impacted various other economic development strategies and taking active steps toward improving broadband and Internet connectivity and availability throughout the region should be a priority for the new five-year Comprehensive Economic Development Strategy for the Northeastern Nevada Regional Development Authority. While the Northeastern Nevada Regional Development Authority has already established a broadband and Internet task force, progress in improving broadband and Internet connectivity within the region has been slow. While many rural (non-metro) communities throughout Nevada and the United States share this problem, improving broadband and Internet connectivity and availability throughout northeastern Nevada will be essential in advancing other various economic development initiatives.

#### 6.5.b Condition 2: Natural Gas

Workshop participants generally agreed that the general lack of reliable and affordable natural gas throughout northeastern Nevada is a primary barrier to the further development of the region's manufacturing and industrial industry sectors. Throughout northeastern Nevada, many individual communities and even individual residents do not have access to reliable and affordable natural gas and, as a result, the region is less attractive to new residents and new manufacturing and industrial firms when compared to other communities and regions that do have access to reliable and affordable natural gas. While there has been some progress in improving access and usage of natural gas within the region, with natural gas generally available in the region's larger population centers, progress has been inconsistent across individual communities. As part of the new five-year Comprehensive Economic Development Strategy for the Northeastern Nevada Regional Development Authority, workshop participants expressed support of making targeted investments in new natural gas availability a top priority in order to recruit new manufacturing and industrial firms to the region and in order to help existing firms expand their current operations.

#### 6.5.c Condition 3: Beef (Ranching) Production

Northeastern Nevada has a long history of cattle ranching and beef production as the Agriculture, Forestry, Fishing and Hunting industry sector has been and remains a critical part of the region's overall economic base. Despite this long history and despite the relative importance of cattle ranching and beef production in northeastern Nevada, the region does not have any way to process beef for consumer consumption and individual cattle ranchers must export their beef to processing centers located outside the region. Historically, the overall size of the regional cattle ranching and beef production market has not been large enough to justify investment in additional value-added beef processing. But continued growth of the regional market and the region's overall population base, suggests that new investment in additional value-added beef processing may now be possible. Workshop participants did note that additional value-added

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beef production located within the region will first have to overcome a number of potential barriers including possible competition from hunting, having to address key state and federal food processing regulations, and even having to deal with various threats to the region's critical rangeland including the ongoing threats of fires, climate change, and various other natural disasters that could disrupt cattle ranching and beef production activities within the region.

#### 6.5.d Condition 4: Passive Income

Regionally, workshop participants noted that individual residents and individual firms face a number of pressures related to the region's relatively high cost of living. Due to the region's relatively small population base and growing cost of living, measures of passive income for northeastern Nevada have failed to grow at similar rates seen for the entire state of Nevada and for the entire United States over the past several years. The disparity between passive income in northeastern Nevada versus passive income for the entire state of Nevada and for the entire United States has made the region less attractive to potential new residents and potential new firms. Without new households with generally high passive income levels moving into the region, individual firms will find it increasingly difficult to sell various goods and services to the population living throughout northeastern Nevada. As part of the new five-year Comprehensive Economic Development Strategy for the Northeastern Nevada Regional Development Authority, workshop participants noted the importance of developing and implementing new initiatives designed to attract additional and increase existing passive income levels to the region that can help reduce the overall cost of living and create a more favorable environment for firms that depend upon the consumption patterns of local residents.

#### 6.5.e Condition 5: Type of Population Growth

In general, the region's overall population has continued to grow over the past several years but growth in the regional population has failed to keep general pace with the rate of population growth for the entire state of Nevada. Additionally, much of the region's new population growth has failed to arrest and reverse the overall trend that the region's total population has grown older over the past few years. These trends have resulted in an ever increasing level of demand for various public services and related healthcare and social services while simultaneously increasing the difficulty that individual firms have in recruiting additional workers to fill key vacant positions.

The new five-year Comprehensive Economic Development Strategy for the Northeastern Nevada Regional Development Authority should focus on three general areas in relationship to the region's changing socio-demographic and population make-up. First, the Northeastern Nevada Regional Development Authority can assist local communities by actively recruiting new firms in the Health Care and Social Assistance industry sector that can provide services that are in growing demand by the region's current population. Second, the Northeastern Nevada Regional Development Authority can actively pursue firms that will also attract a new younger population to the region. And, third, the Northeastern Nevada Regional Development Authority can partner with various other organizations and agencies to build additional workforce development and training programs designed to keep the region's existing population living and working within the region.



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#### 6.5.f Condition 6: Higher Average Household Income than the United States

Workshop participants noted that the region's overall average household income is higher and has grown at significantly higher rates than the average household income for the entire State of Nevada and for the entire United States over the past several years. In general, this condition represents a significant opportunity for the region's existing firms interested in expanding their current operations and for new firms possibly interested in relocating to communities located throughout northeastern Nevada. For individual firms dependent upon local average household incomes of resident households, the region's relatively high average household income level is a strong opportunity as long as individual households can be convinced to support these local and regional firms through direct consumption. Targeted recruitment of new firms should be based upon whether or not the potential new firm can take advantage of these relatively high average household income levels by marketing various goods and services to the region's local population.

#### 6.5.g Condition 7: Steady Population Growth

While the overall intensity of the region's overall population growth has remained relatively low, the region's overall population has continued to grow over the past several years. Compared to other rural (non-metro) communities and regions located throughout the United States, the continued population growth of northeastern Nevada is a significant advantage for existing firms already operating within the region that may be interested in expanding their current operations and for new firms that require a growing population base in order to be successful. However, workshop participants noted that the current rate of population growth for northeastern Nevada may be insufficient to support expanded development of new amenities, new retailers, and even new housing development. Focus on continued sustainable growth of the region's total population, especially in existing population centers that have the necessary infrastructure and services to support additional residents and households, could potentially jumpstart additional development of new amenities, new retail providers, and new housing alternatives needed to support other economic development initiatives.

#### 6.5.h Condition 8: Gaps in the Region's Mining, Quarrying, and Oil and Gas Extraction Industry Sector

The region's Mining, Quarrying, and Oil and Gas Extraction industry sector is the region's largest industry sector, in-terms of total jobs created and in-terms of the employing the largest percentage of the region's existing civilian workforce, and is also the greatest single industry source of various economic 'gaps' and 'disconnects' in northeastern Nevada. Workshop participants noted a number of specific areas in which the Northeastern Nevada Regional Development Authority, as part of its new five-year Comprehensive Economic Development Strategy, can begin to close these 'gaps' and solve these 'disconnects'. Workshop participants noted that there is a growing need to recruit firms that can provide both upstream and downstream supply chain and value chain goods and services to firms operating within the Mining, Quarrying, and Oil and Gas Extraction industry sector. While there may be a relatively limited export market for commercial and industrial machinery manufactured within northeastern

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Nevada, there is a strong internal market for commercial and industrial machinery that can be produced within northeastern Nevada and directly provided to firms operating within northeastern Nevada and throughout the state of Nevada in the Mining, Quarrying, and Oil and Gas Extraction industry sector. A specific, ‘low hanging fruit’, opportunity for closing a specific ‘gap’ and ‘disconnect’ is the market for large industrial tires used by various mining companies already operating within northeastern Nevada. Production, service, repair, and reuse or recycling of these specialized tires could be relocated to northeastern Nevada in order to capture dollars that are exported outside the region for this specialized set of products and services.

#### 6.5.i Condition 9: Leakage in the Region’s Retail Trade Industry Sector

From a consumer point-of-view, the Retail Trade industry sector represents a significant source of overall economic leakage of dollars from the region to various retailers located in regions and communities outside northeastern Nevada. While the region’s various measures of income, including median household income, median family income, and per capita income, remain significantly higher, on average, than similar measures of total income and disposable income for the entire state of Nevada and for the entire United States, retailers in other communities and regions outside northeastern Nevada continue to attract consumers who live and work within northeastern Nevada. A primary source of this ongoing economic leakage has been the relatively slow development of new amenities and retailers throughout northeastern Nevada that could successfully capture these dollars by offering expanded retail choices for local and regional consumers. While direct recruitment of new retailers to the region might be difficult due to relatively slow population growth rates, new business creation and existing business expansion efforts should be pursued for firms already operating within the Retail Trade industry sector in northeastern Nevada. By creating additional firms and expanding existing firms within the region’s Retail Trade industry sector, the existing economic leakage within the Retail Trade industry sector can gradually be closed.

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## 7.0 Vision, Goals, and Objectives

This section presents an overview of the results for Stronger Economies Together Module 5, *Defining Your Regional Vision and Goals*, and Stronger Economies Together Module 6, *Discovering Assets and Barriers*, completed by workshop participants who participated in the first regional strategic economic development planning workshop held on October 3, 2019 and October 4, 2019 in Elko, Nevada and during the second regional strategic economic development planning workshop held on October 17, 2019 in Winnemucca, Nevada. The results of Stronger Economies Together Module 5 and Stronger Economies Together Module 6 were reviewed and revised during the third regional strategic economic development planning workshop held on November 14, 2019 in Ely, Nevada.

### 7.1 Development of a Strategic Economic Development Vision

A strategic economic development vision statement should describe the general direction of where a community or region is headed and what the community and region aims to achieve by the end of the strategic plan's five-year planning horizon. While falling short of providing day-by-day instruction, the strategic economic development vision statement should provide a general overview of the desired course and direction of the finalized strategic economic development plan. An effectively worded strategic economic development vision statement should be graphic, directional, focused, flexible, feasible, desirable, and easy to communicate. The strategic economic development vision statement provides *criteria* through which day-to-day activities and short-term decisions can be evaluated. Ultimately, day-to-day activities and short-term decisions are evaluated by how they contribute to the achievement of the desired course and direction described in the strategic vision statement.

Participants of the first regional strategic economic development planning workshop held on October 3, 2019 and on October 4, 2019 held in Elko, Nevada were asked to complete a number of individual, small group, and large group exercises designed to develop a new strategic economic development vision for the Northeastern Nevada Regional Development Authority's new five-year Comprehensive Economic Development Strategy. As part of Stronger Economies Together Module 5, *Defining Your Regional Vision and Goals*, workshop participants were first asked to answer, first individually and then in small groups, three separate questions, including:

- What will your region look like in 20 to 30 years?
- How and where do people in your region live and work?
- What are your personal hopes and aspirations for your region?



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workshop participants noted a number of areas in which they would like to see improvement, workshop participants noted that any improvement must be built from within the region and that the region maintains its existing sense of self-sufficiency. While growing certain industry sectors to a point where surplus goods and services can be exported to communities and regions outside northeastern Nevada was identified as a priority for the region's new five-year Comprehensive Economic Development Strategy, this growth should be pursued as part of the larger goal of ensuring that there are enough employment opportunities for the region's existing population and future population and that the region's existing population is grown sufficiently and sustainably enough to provide a growing workforce for new and existing firms. According to workshop participants, area independence should be synonymous with economic independence, generally understood as a region's ability to produce employment opportunities and growth in incomes that provide individuals with meaningful opportunities for general advancement.

Finally, as part of the new strategic economic development vision for northeastern Nevada, workshop participants identified four specific *areas of focus* that the new five-year Comprehensive Economic Development Strategy for northeastern Nevada should focus on. The first area of focus is the desire to pursue and create sustainable growth throughout the region. This sustainable growth should be thought of in-terms of both population growth and economic growth where, similar to the discussion regarding area independence, growth in the region's existing population and future population is sufficient to support future economic growth and that future economic growth is sufficient to support future population growth. Developing additional diversity in the region's existing workforce was identified as the second area of primary focus by workshop participants. This diversity is defined in-terms of both attracting a younger workforce with a variety of specialized skills and further developing the region's existing workforce to meet the changing needs of individual firms and individual industry and occupation sectors operating within the region.

While workshop participants expressed their strong support for additional economic development and economic growth, the third area of primary focus, as identified by workshop participants, was the equally strong desire to protect and maintain the region's 'small town western culture' defined by the various rural values listed above. The fourth and final area of focus, as identified by workshop participants, was the desire for the Northeastern Nevada Regional Development Authority to continue to support the region's existing workforce and the region's existing critical industry and occupation sectors through targeted economic diversification efforts designed to close various 'gaps' and 'disconnects' within the large supply chains and value chains of firms with an existing strong economic presence in northeastern Nevada.

In small groups, workshop participants who participated in the first regional strategic economic development planning workshop held on October 3, 2019 and October 4, 2019 were asked to develop separate draft strategic economic development vision statements based upon the answers they provided to the three questions listed above and summarized in Figure 7.1. The following three draft strategic economic development vision statements for the Northeastern Nevada Regional Development Authority's new five-year Comprehensive Economic Development Strategy were eventually crafted by workshop participants:

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- *Draft Strategic Economic Development Vision Statement No. 1:* In five years, northeastern Nevada will be a robust and economically sustainable region that thrives on its rural values, natural resources and diversity within an abundance of access to goods and services supported by a skilled workforce.

Workshop participants who drafted this initial strategic economic development vision statement further defined *rural values* as:

- People look out for each other; everyone is willing to help.
  - We come together to solve problems.
  - Slower pace of life.
  - We take pride in our community.
  - People can be (and are) authentic.
  - If you give your word, it means something.
  - You know and care about your neighbors and others.
- *Draft Strategic Economic Development Vision Statement No. 2:* Being a region rich in natural resources, the Northeastern Nevada Regional Development Authority will utilize education and training and area independence to develop cutting edge food production, manufacturing, and transportation connectivity.

Workshop participants who drafted this initial strategic economic development vision statement further defined *area independence* as:

- Being self-sufficient.
  - Becoming a net economic exporter.
  - Having enough citizens for existing jobs and having enough jobs for existing (future) citizens.
  - Becoming an economically independent region.
- *Draft Strategic Economic Development Vision Statement No. 3:* In the next five years, the northeastern Nevada region will attract and develop a diverse workforce creating sustainable growth while supporting our existing workforce and industries and maintaining our small town western culture.

Workshop participants who drafted this initial strategic economic development vision statement further the region's *area of focus* as:

- Focusing on sustainable economic growth.
- Creating diversity within the region's existing and future workforce (through attraction and internal development).
- Maintaining the region's existing small town western culture.
- Supporting existing and emerging industries and the region's existing and future workforce.

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Based on the three draft strategic economic development vision statements developed during the first regional strategic economic development planning workshop held on October 3, 2019 and October 4, 2019, the following draft strategic economic development vision statement was developed for the Northeastern Nevada Regional Development Authority's new five-year Comprehensive Economic Development Strategy:

- *Initial Draft Strategic Economic Development Vision Statement for the Northeastern Nevada Regional Development Authority:* The Northeastern Nevada Regional Development Authority region will seek to encourage and support sustainable economic growth, focus on our region's critical industry sectors of Agriculture, Forestry, Fishing and Hunting; Arts, Entertainment, and Recreation; Construction; Healthcare and Social Assistance; Mining, Quarrying, and Oil and Gas Extraction; and Wholesale Trade.

The Northeastern Nevada Regional Development Authority region, encompassing the communities in Elko, Eureka, Humboldt, Lander, Pershing (added January 1, 2020), and White Pine counties, will emphasize capacity building, business recruitment, expansion, and retention efforts, and sustainable development in order to support and expand our region's existing workforce, business community, and residential population while protecting each community's cherished rural values and western culture.

The initial draft strategic economic development vision statement for the Northeastern Nevada Regional Development Authority for its new five-year Comprehensive Economic Development Strategy emphasizes six targeted industry sectors and five selected economic development capacity building areas identified by workshop participants who participated in the first regional strategic economic development workshop held on October 3, 2019 and October 4, 2019. The six targeted industry sectors are:

1. **Agriculture** (Agriculture, Forestry, Fishing and Hunting Industry Sector)
2. **Healthcare** (Health Care and Social Assistance Industry Sector)
3. **Mining** (Mining, Quarrying, and Oil and Gas Extraction)
4. **Outdoor-Oriented Tourism and Recreation** (Arts, Entertainment, and Recreation Industry Sector)
5. **Vocational Trades and Construction** (Construction Industry Sector)
6. **Wholesale Trade** (Whole Trade Industry Sector)

The five selected economic development capacity building areas identified by workshop participants who participated in the first regional strategic economic development workshop held on October 3, 2019 and October 4, 2019 are:

1. **Education and Training** (Vocational Trades, Manufacturing, Machining, Construction Trades)

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2. **Housing Development** (Affordable/Obtainable, Market-Rate, Workforce, Senior Housing)
  3. **Marketing and Attraction** (Regional Marketing of the Region including Resources, Business Development Opportunities, Tourism and Recreation)
  4. **Technology Development** (Telecommunications, Broadband, Internet Connectivity)
  5. **Small Business Development, Entrepreneurship, Innovation**

During the second regional strategic economic development planning workshop held on October 17, 2019 in Winnemucca, Nevada, workshop participants were asked to review and subsequently revise the initial draft strategic economic development vision statement and the six targeted industry sectors and the five selected economic development capacity building areas listed above. Workshop participants were further asked to revise the initial draft strategic economic development vision statement and draft their own unique strategic economic development vision statement for the Northeastern Nevada Regional Development Authority's new five-year Comprehensive Economic Development Strategy. Working in small groups, workshop participants drafted the following four additional draft strategic economic development vision statements:

- *Draft Strategic Economic Development Vision Statement No. 1 (from October 17, 2019):* The Northeastern Nevada Regional Development Authority region will seek to encourage and support sustainable economic growth, focused on our region's six critical industry sectors. We will emphasize capacity building, business recruitment, expansion, and retention efforts, and sustainable development in order to support and expand our region's existing workforce and business community while enhancing each community's cherished rural values.
- *Draft Strategic Economic Development Vision Statement No. 2 (from October 17, 2019):* The Northeastern Nevada Regional Development Authority's vision is to strive towards an elevated and sustainable economic growth through positive promotion and support of our vital industry sectors and a focus on community capacity building.
- *Draft Strategic Economic Development Vision Statement No. 3 (from October 17, 2019):* The Northeastern Nevada Regional Development Authority will seek to encourage and support sustainable economic growth, focused on our region's critical industry sectors through capacity building, business recruitment, expansion and retention efforts, and sustainable development. These efforts will result in increased support and expansion of our region's existing workforce, business community, and residential population while protecting each community's cherished rural values and culture.
- *Draft Strategic Economic Development Vision Statement No. 4 (from October 17, 2019):* Develop a regionally integrated and sustainable economy focused on the critical industry sectors while encouraging a diverse workforce and business community. Retail rural values and traditions across diverse cultures.



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Using the additional draft strategic economic development vision statements developed by workshop participants who participated in the second regional strategic economic development planning workshop held in Winnemucca, Nevada on October 17, 2019, and with further refinement provided by workshop participants who participated in the third regional strategic economic development planning workshop held in Ely, Nevada on November 14, 2019, the final strategic economic development vision statement for the Comprehensive Economic Development Strategy for the Northeastern Nevada Regional Development Authority for 2020 through 2025 is:

***In order to overcome the impacts of a ‘boom and bust’ economic cycle, the Northeastern Nevada Regional Development Authority will work to create sustainable economic growth through the promotion and support of the region’s targeted industry sectors while building long-term capacity in select economic development capacity building areas.***

***While respecting and seeking to preserve each community’s own values and culture and by working together, the Northeastern Nevada Regional Development Authority will provide increased support and pursue increased expansion of region’s existing workforce, business community, and residential population through capacity building, business recruitment, expansion and retention efforts, and improved sustainable development.***

While noting different parts of the strategic economic development vision statement, workshop participants noted the various important roles that the Northeastern Nevada Regional Development Authority plays throughout the region in promoting sustainable economic growth. Workshop participants noted that the Northeastern Nevada Regional Development Authority must continue to help plan and coordinate regional economic development initiatives that build upon the existing initiatives undertaken and administered by the region’s various member counties. This effort will involve building further collaborative relationships between the Northeastern Nevada Regional Development Authority, the various member counties and communities, and other critical public sector, non-profit, and private sector partners and stakeholders.

Workshop participants further noted that economic diversification does not have to mean ‘economic replacement’ but instead should focus on how economic development initiatives can ‘add to’ the region’s overall economic base. This effort will require the Northeastern Nevada Regional Development Authority to respect the existing and future efforts that individual communities and counties take toward economic development and economic growth. By playing a supporting role for local community and county-level economic development initiatives, the Northeastern Nevada Regional Development Authority can help promote and protect the rural values, area independence, and specific areas of focus that best represent and fit the unique needs of the local communities located throughout northeastern Nevada.

As part the refinement of the Northeastern Nevada Regional Development Authority’s new strategic economic development vision for its new five-year Comprehensive Economic Development Strategy, workshop participants who participated in the third regional strategic economic development planning workshop held in Ely, Nevada on November 14, 2019 were asked to further refine the definitions of *rural values* and *area independence* and further refine

the specific *areas of focus* for the new five-year Comprehensive Economic Development Strategy. The refined definitions and refined area of focus were used to refine the specific economic development goals and objectives and develop a comprehensive implementation and action plan.

Figure 7.2 presents a word cloud summarizing the additional definitions of *rural values* developed by workshop participants who participated in the third regional strategic economic development planning workshop held on November 14, 2019.

**Figure 7.2 – Rural Values**  
**Northeastern Nevada Regional Development Authority**



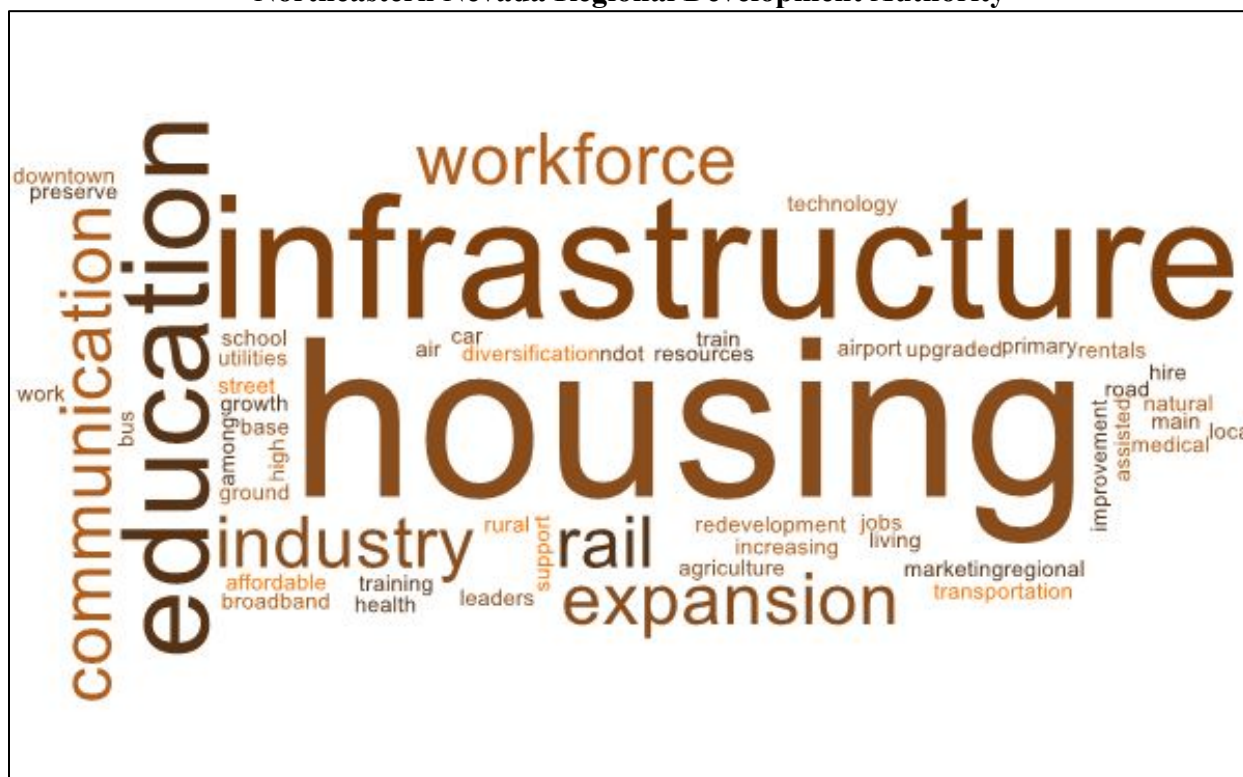
Similar to the definition of *rural values* initially developed during the first regional strategic economic development planning workshop held on October 3, 2019 and October 4, 2019, the additional definitions of *rural values* emphasized a strong sense of pride that people have for their communities and a strong desire to protect and maintain the high quality of life that already exists throughout northeastern Nevada. Workshop participants who participated in the third regional strategic economic development planning workshop held on November 14, 2019 emphasized low crime rates, the respect that people have for each other, the commitment to public safety, and the general commitment individuals have to their community as key parts of the rural values that should be and must be protected as part of the Northeastern Nevada Regional Development Authority’s new five-year Comprehensive Economic Development Strategy. Protecting these rural values can be accomplished by emphasizing local autonomy and local area independence in the eventual development and implementation of new economic development initiatives. While the Northeastern Nevada Regional Development Authority will



critical source of new workers for the region’s existing and growing industry and occupation sectors.

Figure 7.4 presents a word cloud summarizing the additional *areas of focus* for the Northeastern Nevada Regional Development Authority developed by workshop participants who participated in the third regional strategic economic development workshop held on November 14, 2019.

**Figure 7.4 – Additional Areas of Focus  
Northeastern Nevada Regional Development Authority**



Housing, infrastructure, and education were the three primary *areas of focus* that workshop participants, during the third regional strategic economic development planning workshop, almost unanimously agreed upon. In regard to housing, workshop participants noted that the future development of various housing types, including market-rate housing, affordable and workforce housing, and senior housing, as a critical area of focus for the Northeastern Nevada Regional Development Authority’s new five-year Comprehensive Economic Development Strategy. In regard to infrastructure, workshop participants noted that successful future economic development initiatives, including various business recruitment, retention, and expansion efforts, will depend upon the ability of improving the region’s existing mix of infrastructure. Workshop participants noted a number of specific infrastructure areas including transportation infrastructure, telecommunication and broadband/Internet infrastructure, water, sewer, and power as infrastructure areas in need of significant additional investment.

Finally, workshop participants noted the general importance that education will play in the region’s future overall economic development strategy. Workshop participants specifically

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noted the need for increased investment in various workforce development and job training educational programs. While workshop participants highlighted the many different workforce development and job training educational programs that already exist throughout northeastern Nevada, workshop participants noted the need for additional coordination among these programs and refocusing the various programs toward creating, attracting, retaining, and expanding new and existing firms in key targeted industry and occupation sectors.

## 7.2 Development of a Set of New Strategic Economic Goals and Objectives

According to the US Department of Agriculture Rural Development's Stronger Economies Together (SET) strategic planning curriculum, SMART goals should be **s**pecific, **m**easurable, **a**ttainable, **r**elevant, and **t**ime framed. A *specific* goal clearly states what should be achieved and where efforts will be focused. A *measurable* goal provides a plan to track and assess progress made in achieving the goal and establishes milestones to be achieved during the strategic plan's implementation. An *attainable* goal takes into account the availability of needed resources while also recognizing the factors that might prevent the organization from achieving the goal. A *relevant* goal provides an idea as to why it is important for the organization to achieve it by outlining the benefit of achieving the goal. A *time framed* goal is one that has a clearly defined target date for accomplishing the goal.

### 7.2.a SMART Goals for the Targeted Industry Sectors and Selected Economic Development Capacity Building Areas

Using the definitions of a SMART goal provided above, workshop participants who participated in the second regional strategic economic development planning workshop held on October 17, 2019 were asked to develop a set of new strategic economic development goals for the Northeastern Nevada Regional Development Authority's new five-year Comprehensive Economic Development Strategy. In small groups, workshop participants developed a series of new strategic economic development goals for each of the six targeted industry sectors (Agriculture, Healthcare, Mining, Outdoor-Oriented Tourism and Recreation, Vocational Trades and Construction, and Wholesale Trade) and for each of the five selected economic development capacity building areas (Education and Training, Housing Development, Marketing and Attraction, Technology Development, and Small Business Development, Entrepreneurship, and Innovation). Individual workshop participants were then asked to prioritize each drafted strategic economic development goal by voting.

The following is a list of the SMART goals developed by the small groups for each of the targeted industry sectors (Agriculture, Healthcare, Mining, Outdoor-Oriented Tourism and Recreation, Vocational Trades and Construction, and Wholesale Trade) and the number of individual votes each SMART goal received.

#### **Targeted Industry Sector No. 1, *Agriculture***

- **Goal No. 1** (8 votes): Five new agricultural product processing facilities over four years by 2022.

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- **Goal No. 2** (4 votes): Identify new added value diversified crops opportunities for farmers in the region by December 2021.
  - **Goal No. 3** (2 votes): Increase sole proprietors growing or processing foods to retail customers from 100 percent to 200 percent in the Northeastern Nevada Regional Development Authority region by December 2022.
  - **Goal No. 4** (0 votes): Increase accessibility to locally grown foods by 20 percent in the next five years.

#### **Targeted Industry Sector No. 2, *Healthcare***

- **Goal No. 1** (4 votes): Partner with urban health care systems to bring specialized medicine to rural communities, women's health, senior living, cancer treatment in the next five years.
- **Goal No. 2** (4 votes): To establish a medical health educational and behavioral facility fully staffed by 2021.
- **Goal No. 3** (3 votes): Increase availability and utilization of local healthcare services within the Northeastern Nevada Regional Development Authority region by 10 percent over five years (2 percent per year).
- **Goal No. 4** (0 votes): Work with healthcare providers to prepare a study of cost comparison in rural Nevada areas without larger medical facilities within two years.

#### **Targeted Industry Sector No. 3, *Mining***

- **Goal No. 1** (3 votes): Increase mining related supply chain companies by 20 percent at open 'bricks & mortar' by 2022.
- **Goal No. 2** (1 vote): Each region to increase their utilization of industrial zoned property by 20 percent by providing the essential infrastructure to support new mining-related business by 2022.
- **Goal No. 3** (0 votes): Increase local processing and utilization (i.e. making batteries, value-added) of mined materials by 15 percent by December 2024.
- **Goal No. 4** (0 votes): Develop and launch a broad spectrum mining campaign to educate the world on the importance of mining by 2021.
- **Goal No. 5** (0 votes): Regional approach with mining industries; partner with mining industry and schools to recruit a workforce; develop a recruiting process with mining industry partners to meet the workforce demand for the next five years.



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#### **Targeted Industry Sector No. 4, *Outdoor-Oriented Tourism and Recreation***

- **Goal No. 1** (5 votes): Create three experiential recreation opportunities that draw people from outside the region by December 2024.
- **Goal No. 2** (1 vote): Identify additional regional tourism oriented, create guide for opportunities.
- **Goal No. 3** (0 votes): Increase in tourism room tax revenue by 25 percent in our region by 2022.

#### **Targeted Industry Sector No. 5, *Vocational Trades and Construction***

- **Goal No. 1** (9 votes): Work with local educators (high school, junior colleges, etc.) to implement and enhance vocational skills training programs to grow local talent pools by 5 percent over the next five years (2024).
- **Goal No. 2** (6 votes): Establish thriving special trades programs in every city by increasing students and adults to increase graduation and job placement by 50 percent by 2021.
- **Goal No. 3** (6 votes): Develop vocational and construction training programs to support a 20 percent increase in the workforce by 2022.
- **Goal No. 4** (3 votes): Identify workforce need and partner with education facilities to train future workforce for the next five years.

#### **Targeted Industry Sector No. 6, *Wholesale Trade***

- **Goal No. 1** (4 votes): Identify added value diversified crops opportunities for framers in the region by December 2021 (tied to *Goal No. 2 for Agriculture*).
- **Goal No. 2** (1 vote): Each region to increase their utilization of industrial zoned property by 20% by providing the essential infrastructure to support new business across other targeted industry sectors by 2022.
- **Goal No. 3** (0 votes): Increase wholesale trade for mining upline and downline by 25% by December 2024.

The following is a list of the SMART goals developed by the small groups for each of the various selected economic development capacity building areas Education and Training, Housing Development, Marketing and Attraction, Technology Development, and Small Business Development, Entrepreneurship, and Innovation) and the number of individual votes each SMART goal received.

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### **Selected Economic Development Capacity Building Area No. 1, *Education and Training***

- **Goal No. 1** (6 votes): Combine all existing programs and fragmented programs in community into a solid and robust training program which is comprehensive covering school age through adults.
- **Goal No. 2** (6 votes): Develop vocational and construction training programs to support a 20 percent increase by 2022.
- **Goal No. 3** (6 votes): Identify highest demands for training needs for secondary tier industry (to support local needs) by 20 percent in two years.
- **Goal No. 4** (5 votes): Create mentoring, apprentices, accredited certificate programs for trades through Great Basin College, the University of Nevada, Reno with local satellites by 2021.

### **Selected Economic Development Capacity Building Area No. 2, *Housing Development***

- **Goal No. 1** (5 votes): Conduct a regional study on housing shortages and housing development opportunities within 18 months.
- **Goal No. 2** (1 vote): Identify and develop incentives for builders of all income brackets up to \$50,000 by December 2020; develop regional assessment for housing needs to use as a marketing tool for developers in two years.
- **Goal No. 3** (0 votes): Development of multi-family housing for 300 families (units) by 2024.
- **Goal No. 4** (0 votes): Increase new home starts determined by identified need in each community; percentage to vary based on individual community.

### **Selected Economic Development Capacity Building Area No. 3, *Marketing and Attraction***

- **Goal No. 1** (4 votes): Create an online marketing campaign highlighting economic opportunities of the region that will increase Northeastern Nevada Regional Development Authority website visits by 30 percent over the next two years.
- **Goal No. 2** (4 votes): Create additional guide for tourism and recreation working with the six county's visitor centers by December 2020; partner with national and international brands to promote rural Nevada "when rural thrives, America thrives".
- **Goal No. 3** (1 vote): Collaborate throughout the region to share resources, ideas, efforts, successes to coordinate activities and 'draw' in an effort to promote regional economic development by December 2020.
- **Goal No. 4** (0 votes): Create marketing campaign that highlights the region's cultural and recreational opportunities and events by 2021.



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#### **Selected Economic Development Capacity Building Area No. 4, *Technology Development***

- **Goal No. 1** (5 votes): Partner with Amazon and Google for broadband Internet connectivity to support and encourage Williams Telecommunication to provide access to rural communities by 2021.
- **Goal No. 2** (2 votes): Partners with Google Loon to improve Internet and connectivity and use as a model for national rural communities within five years.
- **Goal No. 3** (0 votes): To improve infrastructure of broadband availability throughout community which will essentially increase Internet speed and access by 20 percent annually over the next five years.
- **Goal No. 4** (0 votes): Develop two options to address broadband shortages in the next 12 months.

#### **Selected Economic Development Capacity Building Area No. 5, *Small Business, Entrepreneurship, Innovation***

- **Goal No. 1** (4 votes): To offer a tax incentive program/break to small businesses employing more than 30 employees, including the number of small businesses in our region by 30 percent by 2022.
- **Goal No. 2** (3 votes): Develop a competitive think tank regionally for small businesses by 2022.
- **Goal No. 3** (2 votes): Educate small business community on closing the economic gap to stop the goods and services leakage by 2021.
- **Goal No. 4** (2 votes): Educate residents to support local businesses, create a ‘shop small business Saturday’ event; partner with StartUpNV to grow rural entrepreneurship ecosystems by holding a rural pitch conference in May 2021.

A total of 23 individual goals were developed for the various targeted industry sectors and a total of 20 individual goals were developed for the various selected economic development capacity building areas by workshop participants who participated in the second regional strategic economic development planning workshop held on October 17, 2019 in Winnemucca, Nevada.

#### **7.2.b Identification of Assets, Capital Needs, and Barriers for Each SMART Goal**

The development of an accompanying implementation plan for each new strategic goal and objective begins with identifying the various assets an organization has at its immediate disposal to use in achieving a stated goal or objective. Assets can be divided into four categories, including: (1) people, (2) physical resources, natural and human made, (3) voluntary associations, strategic partnerships, and (4) local formal institutions.

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People assets are the talents and skills of people both within and outside the organization that have access to and can provide important resources the organization will require. Physical resources, both natural and human made, include water and land-related amenities, vacant and underutilized buildings, historical and cultural sites, technology and equipment, and other physical ‘things’ the organization can use or deploy to achieve organizational goals and objectives. Voluntary associations, generally thought of as strategic partnerships, consist of relationships between the organization and other agencies, entities, and even other organizations that can be counted on to assist the organization in achieving mutually shared goals and objectives. Local formal institutions are other organizations, typically a government or government agency, which can provide programs, facilities and services to the organization. These local formal institutions tend to carry out specific functions vital to the long-term sustainability of the organization’s efforts.

The second step in developing an accompanying implementation plan involves identifying the needed capital that the organization does not currently have but will need in order to achieve a specific organizational goal and objective. Capital can be divided into seven interdependent categories, including: (1) natural, (2) cultural, (3) human, (4) social, (5) political, (6) financial, and (7) built.

Natural types of capital include the quality and quantity of natural and environmental resources. Cultural types of capital include the values, norms, beliefs and traditions of the community(ies) the organization operates within and of the internal and external individuals who regularly engage with the organization. The education and skills of organizational members and the learning opportunities and programs designed to build organizational leadership are used to measure human capital. Social capital includes the internal and external connections among people and the organization. Political capital refers to the ability of the organization or individuals to influence and enforce rules and regulations and can also refer to the organization’s degree of access to influential people and decision makers. Political capital can also be measured by the degree of stakeholder engagement with the organization. Financial capital is the ‘cash’ and other financial assets the organization will need to develop and implement its own efforts. Built capital typically includes the infrastructure, including facilities, services, and physical structures, needed in order to support organizational activities.

The third and final step in building an implementation plan includes exploring the possible barriers that might arise during implementation and that could prevent an organization from successfully achieving all or part of a specific strategic goal and objective. Barriers are forces that might hinder successful achievement of a specific organizational goal or the successful implementation of the overall strategic plan. Barriers can arise from within or outside the organization or can arise simultaneously from within and outside the organization. Ultimately, successful implementation of an organizational strategic plan involves developing countermeasures to reduce resistance to implementation and overcome possible barriers as they may arise.

The following is a list of the new strategic economic development goals for each of the six targeted industry sectors for the Northeastern Nevada Regional Development Authority’s new five-year Comprehensive Economic Development, including the asset needs, capital needs, and

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potential barriers for each new strategic economic development goal as developed by workshop participants during the second regional strategic economic development planning workshop held in Winnemucca, Nevada on October 17, 2019.

### **Targeted Industry Sector No. 1, *Agriculture***

- **Goal No. 1** (8 votes): Five new agricultural product processing facilities over four years by 2022.

#### Assets:

- No Assets Identified

#### Capital:

- Additional Financial Capital as Needed

#### Barriers:

- No Barriers Identified

- **Goal No. 2** (4 votes): Identify new added value diversified crops opportunities for farmers in the region by December 2021.

#### Assets:

- People: Sam Routson, Tracy S., Silverlion Farms, Rick McLintick
- Physical: Ranchers and Farmers with Agricultural Water Rights and Land
- Voluntary: University of Nevada Cooperative Extension, U.S. Department of Agriculture, Farm Bureau, Conservation Districts
- Formal Institutions: Future Farmers of America, 4H

#### Capital:

- Water
- Innovation
- Next Generation Technology
- Permitting (Local, State, Federal Government)
- Money and Other Financial Capital Requirements
- Rail Infrastructure
- Trained Workforce

#### Barriers:

- Barrier: Fire and Weeds – Invasive, Bugs, Drought (Threat to New Crops)
- Internal or External Source? External and Internal Threat
- Source of Barrier: Potential of Existing Trade Wars to Disrupt Global Demand
- Solve Barrier: Utilization of Automation in Production

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- **Goal No. 3** (2 votes): Increase sole proprietors growing or processing foods to retail customers from 100 percent to 200 percent in the Northeastern Nevada Regional Development Authority region by December 2022.

Assets:

- People: Ranchers, Farmers, Guides
- Physical: Farmers Markets, Grocery Stores, Ranches, Farms, Wilderness Areas (U.S. Bureau of Land Management, U.S. Forest Service)

Capital:

- Money and Other Needed Financial Requirements
- Ideas and Innovation
- Required Equipment
- Buildings, Land, Processing Plants
- Advertisement and Marketing Efforts
- Connectivity, High-Speed Internet
- Required Technology and Tech-Training
- Value-Added Sellers and Providers
- Education Programs and Teachers
- Students
- Legislative Changes (State)

Barriers:

- Barrier: Needed Business Training for Farmers and Ranchers
- Impact Goal or Plan? Impact Mostly Just the Goal
- Internal or External Source? Internal
- Source of Barrier: Lack of Reliable High-Speed Internet that can be used to Train and Educate Farmers and Ranchers
- Solve Barrier: Develop Needed Training Programs

- **Goal No. 4** (0 votes): Increase accessibility to locally grown foods by 20 percent in the next five years.

Assets:

- People: Ranchers and Farmers
- Physical: Water Rights
- Voluntary: Elko Fair, 4H, Cattleman's Association
- Formal Institutions: University of Nevada Cooperative Extension, Cattleman's Association

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Capital:

- Change in Cultural Mindset
- Money and Other Required Financial Resources
- Needed Facilities
- Industry Experts

Barriers:

- Barrier: Natural Disasters
- Internal or External Source? Primarily External

**Targeted Industry Sector No. 2, *Healthcare***

- **Goal No. 1** (4 votes): Partner with urban health care systems to bring specialized medicine to rural communities, women's health, senior living, cancer treatment in the next five years.

Assets:

- People: Doctors, Nurses, Existing Healthcare Professionals
- Physical: Hospitals, Clinics, Doctor's Offices, Urgent Care Centers
- Voluntary: Current Provider(s), Advisory Boards, Retired Providers/Teachers
- Formal Institutions: Great Basin College, University of Nevada, Las Vegas, Toro-U

Capital:

- Needed Education and Training Programs
- Teachers and Students
- Internet Connections for Online Courses
- Classrooms and Laboratories
- Money and Other Needed Financial Resources
- Facilities for Providing Medical Care

Barriers:

- Barrier: Lack of Institutional Capacity, Legislative Barriers
  - Impact Goal or Plan? Impact Just the Goal
  - Internal or External? Internal
  - Source of Barrier: No Money and Hospitals and Legislatures are Not Willing to Fund Programs
- **Goal No. 2** (4 votes): To establish a medical health educational and behavioral facility fully staffed by 2021.

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Assets:

- People: Healthcare Providers, Doctors, Nurses, Frontier Coalition, Family Resource Center, Family Drug Court (Judge Montero), Mines Health Clinics
- Voluntary: Ambulance Corp., State Health Officials, Rural County Health Nurse
- Physical: Local Fitness Centers, Boys & Girls Club, Mines Health Clinics, Family Health Center, HGH, WMCA, Rotary, Lions Club, Senior Centers

Capital:

- Additional Financial Capital as Needed

Barriers:

- No Barriers Identified
- **Goal No. 3** (3 votes): Increase availability and utilization of local healthcare services within the Northeastern Nevada Regional Development Authority region by 10 percent over five years (2 percent per year).

Assets:

- People: Board of Health, Providers and Support Teams
- Physical: Hospital, Clinics, Urgent Care, Buildings
- Voluntary: Community Organizations, Nevada Health Centers
- Formal Institutions: Northeastern Nevada Regional Hospital, Great Basin College, University of Nevada, Reno, Elko County School District, Nevada Health Centers

Capital:

- Providers
- A Market that can Support Expanded Services
- Required Infrastructure
- Change in the Mindset of the Perceived Quality of Local Care Services
- Improved Affordability of Local Care Services

Barriers:

- Barrier: Lack of Providers
  - Impact Goal or Plan? Potential to Impact Entire Plan
  - Solve Barrier: Create and Provide Incentives for Rural Areas
- 
- Barrier: Lack of Use of Available Healthcare
  - Source of Barrier: Overall Cost of Care
  - Solve Barrier: Develop and Use New Technology

- 
- **Goal No. 4** (0 votes): Work with healthcare providers to prepare a study of cost comparison in rural Nevada areas without larger medical facilities within two years.

Assets:

- People: Nurses, Doctors, Administration, Insurance Providers, Renown Executive Management Team
- Physical: Humboldt General Hospital, Northeastern Nevada Regional Hospital, Battle Mountain General Hospital, Pershing General Hospital (Lovelock), University of Nevada, Reno Medical School, Great Basin College Nursing Program, Local Drug and Pharmacy Providers
- Voluntary: Veterans, Family Resource

Capital:

- Doctors and Nurses (Additional Healthcare Providers)
- Improvement in Affordability
- Improved Trust between Service Providers and Public
- Legislative and Regulatory Changes (Local, State, and Federal)

Barriers:

- Barrier: Automation of Services
- Barrier: Inability to Attract and Retain Trained Professionals
- Internal or External Source? Both Internal and External
- Source of Barrier: State Licensing Requirements
- Solve Barrier: Needed Government Legislation

**Targeted Industry Sector No. 3, *Mining***

- **Goal No. 1** (3 votes): Increase mining related supply chain companies by 20 percent at open ‘bricks & mortar’ by 2022.

Assets:

- No Assets Identified

Capital:

- No Capital Needs Identified

Barriers:

- No Barriers Identified

- 
- **Goal No. 2** (1 vote): Each region to increase their utilization of industrial zoned property by 20 percent by providing the essential infrastructure to support new mining-related business by 2022.

Assets:

- People: Industrial Developers and Builders
- Physical: Water, Land, Sewer, Roads, Infrastructure in General
- Voluntary: Existing Chambers of Commerce, Contractors
- Formal Institutions: Nevada Gold Mines, City of Elko, Various County Governments, Kinross, Contractors

Capital:

- City and County Support
- Improved Broadband Connectivity
- Additional Financial Investors
- Support from Key Champions and Stakeholders
- Additional Required Infrastructure
- Water and Land Rights
- Needed Materials and Equipment

Barriers:

- Barrier: Lack of Collaboration, Re-Location Support
  - Impact Goal or Plan? Potential Impact to Entire Plan
  - Internal or External Source? Internal and External
  - Source of Barrier: Multiple Sources (Public-Sector and Private-Sector)
  - Solve Barrier: Develop Need Financial Incentives, Secure Additional Private-Sector Investment and Financial Capital
- **Goal No. 3** (0 votes): Increase local processing and utilization (i.e. making batteries, value-added) of mined materials by 15 percent by December 2024.

Assets:

- No Assets Identified

Capital:

- No Capital Needs Identified

Barriers:

- No Barriers Identified

- **Goal No. 4** (0 votes): Develop and launch a broad spectrum mining campaign to educate the world on the importance of mining by 2021.



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Assets:

- No Assets Identified

Capital:

- Additional Financial Capital as Needed

Barriers:

- No Barriers Identified
- **Goal No. 5** (0 votes): Regional approach with mining industries; partner with mining industry and schools to recruit a workforce; develop a recruiting process with mining industry partners to meet the workforce demand for the next five years.

Assets:

- Natural Resources (Availability and Quantity)
- Existing Mines Operating within the Region
- Nevada Bureau of Mines, Division of Minerals, University of Nevada, Reno (School of Mines)
- Existing Employees, Mineral Engineers, GSM
- Societal Support throughout the Region

Capital:

- Needed Workforce with Required Skill Set
- Education and Training Programs
- Legislative and Regulatory Changes
- Expanded and Improved Rail Infrastructure

Barriers:

- Barrier: Automation of Related Processes, Required Permitting
- Source of Barrier: Government (State, Federal), Depletion of the Natural Resource, Lack of Required Investment

**Targeted Industry Sector No. 4, *Outdoor-Oriented Tourism and Recreation***

- **Goal No. 1** (5 votes): Create three experiential recreation opportunities that draw people from outside the region by December 2024.

Assets:

- People: Guides, Bed & Breakfasts, Restaurants, Hospitality Industry
- Physical: Hotels, Restaurants, Campgrounds, National and State Parks

- 
- Voluntary: Citizen Volunteers
  - Formal Institutions: Chambers of Commerce, NTOC, Convention, Visitor and Tourism Authorities, U.S. Bureau of Land Management, U.S. Forest Service

Capital:

- Support from Additional Business Owners
- Additional Volunteers
- Social Media Campaign
- Other Needed Financial Resources
- Access to Lands and Trails
- Developed Marketing Campaign (Maps, Guides, Billboards)

Barriers:

- Barrier: Unfavorable Legislation
  - Source of Barrier: Licensing and Insurance Requirements, Cost of Marketing and Public Education Campaign
- **Goal No. 2** (1 vote): Identify additional regional tourism oriented, create guide for opportunities.

Assets:

- Natural Resources
- Non-Profit Groups (Wildlife Promotion and Protection)
- Nevada Division of Wildlife, State Parks, U.S. Bureau of Land Management, U.S. Forest Service
- Nevada Department of Tourism and Cultural Affairs, National Park Service

Capital:

- Access to Public Lands and Trails
- Required Permitting Completed
- Needed Regulatory Approval from U.S. Bureau of Land Management and U.S. Forestry Service (Other Local, State, and Federal Agencies)
- Partnership with an “Adventure Company” for Marketing Purposes

Barriers:

- Barrier: Aging Population, Natural Disasters
  - Internal or External Source: External
  - Source of Barrier: Lack of Government Involvement
- **Goal No. 3** (0 votes): Increase in tourism room tax revenue by 25 percent in our region by 2022.

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Assets:

- People: Tourists, Hotels, Chambers of Commerce
- Physical: Lakes, Mountains, Various Outdoor Recreation Opportunities
- Voluntary: Arts and Culture Community, Various Downtown Business Associations, Existing Cultural Events, Elko Fairgrounds, Elko Convention and Visitors Authority

Capital:

- Need Financial Resources Specifically for Marketing Efforts

Barriers:

- Barrier: Unexpected Economic Changes, Natural Disasters
- Impact Goal or Plan? Just Goal, With Minimal Impact
- Internal or External Source? External

**Targeted Industry Sector No. 5, *Vocational Trades and Construction***

- **Goal No. 1** (9 votes): Work with local educators (high school, junior colleges, etc.) to implement and enhance vocational skills training programs to grow local talent pools by 5 percent over the next five years (2024).

Assets:

- People: Existing Trade Owners
- Physical: Large Supply of Vacant Buildings
- Voluntary: Licensing Agencies
- Formal Institutions: Great Basin College, Area High Schools (School Districts)

Capital:

- Needed Teachers and Mentors
- Additional Financial Resources as Needed
- Interested Students
- Required Technology
- New Facilities
- Required Equipment and Tools

Barriers:

- Barrier: Have to Build the Programs from the “Ground Up”, will Require Additional Financial Resources, Education of the Public, Local Communities to Partner with Higher Education
- Internal or External? External
- Source of Barrier: Resistance from the Board of Regents

- 
- Solve Barrier: Use of Trade Schools and Apprenticeships
  - **Goal No. 2** (6 votes): Establish thriving special trades programs in every city by increasing students and adults to increase graduation and job placement by 50 percent by 2021.

Assets:

- No Assets Identified

Capital:

- Additional Financial Resources as Needed

Barriers:

- No Barriers Identified
- **Goal No. 3** (6 votes): Develop vocational and construction training programs to support a 20 percent increase in the workforce by 2022.

Assets:

- People: Educators, Students, Community Members (Buy-In)
- Physical: Materials, Equipment, Facilities
- Voluntary: Industrial and Industry Sector Partnerships, CIS
- Formal Institutions: Great Basin College, Truckee Meadows Community College, Area School Districts, University of Nevada, Reno

Capital:

- Additional Financial Resources as Needed
- Required Facilities
- Private-Sector Investors
- Early Exposure and Marketing of the Programs
- “Pipelines” for Employment Opportunities
- Change in the Regions’ Value of Education
- Political Champions
- Needed Financial Incentives
- Trades Charter School

Barriers:

- Barrier: Facilities, Financial Resources, Skilled Instructors, Broadband Connectivity, New Technologies
- Internal or External Source? Internal and External
- Impact Goal or Plan? Could Potentially Impact the Entire Plan

- 
- **Goal No. 4** (3 votes): Identify workforce need and partner with education facilities to train future workforce for the next five years.

Assets:

- Great Basin College, University of Nevada, Reno, Truckee Meadows Community College, Western Nevada College
- Local Contractors, Nevada Builders Association
- Local Suppliers
- Government Entities (Primarily Local)
- Existing Unions (Apprenticeship Programs)

Capital:

- Required Educators
- Required Facilities
- Retaining Opportunities and Curriculum
- Champions and Key Stakeholders to Support the Eventual Programs
- Additional Financial Resources as Needed

Barriers:

- Barrier: Existing Workforce Characteristics
- Internal or External Source? Internal and External
- Source of Barrier: Existing Stigma of College vs. Vocational and Vo-Tech Education

**Targeted Industry Sector No. 6, *Wholesale Trade***

- **Goal No. 1** (4 votes): Identify added value diversified crops opportunities for framers in the region by December 2021 (tied to *Goal No. 2 for Agriculture*).

Assets:

- Agriculture, Mining, Lithium, Hemp, Legal Recreational and Medicinal Marijuana Dispensaries
- Tesla
- Made in Nevada Products (U.S. Small Business Administration, Nevada Small Business Development Center)

Capital:

- Additional Financial Resources as Needed
- Key Stakeholders and Champions
- Required Infrastructure as Needed
- Improved Accessibility of Rail Infrastructure

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Barriers:

- Barrier: Infrastructure
  - Internal or External Source? External
  - Source of Barrier: Government Investments, Additional Space and Facilities
  - Solve Barrier: Develop and Employ Automation Processes
- **Goal No. 2** (1 vote): Each region to increase their utilization of industrial zoned property by 20 percent by providing the essential infrastructure to support new business across other targeted industry sectors by 2022.

Assets:

- People: Industrial Developers and Builders
- Physical: Water, Land, Sewer, Roads (General Infrastructure)
- Voluntary: Chambers of Commerce, Contractors
- Formal Institutions: Nevada Gold Mines, Various City and County Governments, Kinross, Contractors

Capital:

- City and County Government Support
- Improved Broadband Connectivity
- Private-Sector Investors
- Industry “Staples”
- Additional Key Stakeholders and Champions
- Additional Required Infrastructure (As Needed)
- Securing of Needed Water and Land Rights (As Needed)
- Various Materials and Equipment

Barriers:

- No Barriers Identified
- **Goal No. 3** (0 votes): Increase wholesale trade for mining upline and downline by 25 percent by December 2024.

Assets:

- People: Vendors, Employees
- Physical: Mine Sites, Industrial Parks, Supply of Vacant Property
- Voluntary: Nevada Mining Association, Northeastern Nevada Regional Development Authority
- Formal Institutions: Mining Industry, Nevada Mining Association

Capital:

- Select Vacant Buildings

- 
- Additional Land in Selected Locations
  - Customers and Suppliers
  - Additional Networking
  - Needed Financial Resources
  - Required Technology

Barriers:

- No Barriers Identified

The following is a list of the new strategic economic development goals for each of the five selected economic development capacity building areas for the Northeastern Nevada Regional Development Authority's new five-year Comprehensive Economic Development, including the asset needs, capital needs, and potential barriers for each new strategic economic development goal as developed by workshop participants during the second regional strategic economic development planning workshop held in Winnemucca, Nevada on October 17, 2019.

**Selected Economic Development Capacity Building Area No. 1, *Education and Training***

- **Goal No. 1** (6 votes): Combine all existing programs and fragmented programs in community into a solid and robust training program which is comprehensive covering school age through adults.

Assets:

- People: Jan Morrison, Denise C., Aaron West (Nevada Builders Association), Lu Torres (U.S. Department of Agriculture Rural Development)
- Physical: Local Area School Districts, Great Basin College (Classroom and Equipment)
- Formal Institutions: Northeastern Nevada Regional Development Authority, Join, Inc., Nevada Builders Association, Alliance, Great Basin College, Local Area School Districts, U.S. Department of Agriculture, City and County Governments

Capital:

- Needed Financial Resources

Barriers:

- No Barriers Identified

- **Goal No. 2** (6 votes): Develop vocational and construction training programs to support a 20 percent increase by 2022.

Assets:

- People: Educators, Students, Community Members
- Physical: Materials, Equipment, Facilities

- 
- Voluntary: Industrial Partnerships, CIS
  - Formal Institutions: Great Basin College, Truckee Meadows Community College, Local Area School Districts, University of Nevada, Reno

Capital:

- No Capital Needs Identified

Barriers:

- No Barriers Identified
- **Goal No. 3** (6 votes): Identify highest demands for training needs for secondary tier industry (to support local needs) by 20 percent in two years.

Assets:

- Great Basin College, University of Nevada, Reno, Truckee Meadows Community College, Western Nevada College
- Local Contractors, Nevada Builders Association
- Local Suppliers
- Government Entities (Cities, Counties, School Districts)
- Unions (Apprenticeship Programs)
- Junior Achievement
- 4H

Capital:

- Required Instructors
- Needed Facilities
- Programs for Retraining People
- Required Financial Resources
- Development of Additional Trade Programs (Secondary)

Barriers:

- No Barriers Identified
- **Goal No. 4** (5 votes): Create mentoring, apprentices, accredited certificate programs for trades through Great Basin College, the University of Nevada, Reno with local satellites by 2021.

Assets:

- No Assets Identified

Capital:

- No Capital Needs Identified



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Barriers:

- No Barriers Identified

**Selected Economic Development Capacity Building Area No. 2, *Housing Development***

- **Goal No. 1** (5 votes): Conduct a regional study on housing shortages and housing development opportunities within 18 months.

Assets:

- People: Developers, Builders, Municipalities, Community Members
- Physical: Materials, Land and Water (Rights), Infrastructure
- Voluntary: Census Bureau, Community Organizations
- Formal Institutions: Contract with Consultants

Capital:

- No Capital Needs Identified

Barriers:

- No Barriers Identified
- **Goal No. 2** (1 vote): Identify and develop incentives for builders of all income brackets up to \$50,000 by December 2020; develop regional assessment for housing needs to use as a marketing tool for developers in two years.

Assets:

- Great Basin College, University of Nevada, Reno, Truckee Meadows Community College, Western Nevada College
- Local Contractors, Nevada Builders Association
- Government Entities (Cities and Counties)
- Unions (Apprenticeship Programs)

Capital:

- Specialized Developers
- Availability of Affordable Land
- Needed Workforce
- Required Financial Resources
- Development of Targeted Incentives (State)

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Barriers:

- Barrier: Land Shortage, Fiscal Policies, Cost of Supplies (Government), Infrastructure Support, Existing Supply and Demand Conditions, Planning Requirements
  - Internal or External Source? External
  - Solve Barrier: Significant Changes to Licensing Requirements
- **Goal No. 3** (0 votes): Development of multi-family housing for 300 families (units) by 2024.

Assets:

- No Assets Identified

Capital:

- No Capital Needs Identified

Barriers:

- No Barriers Identified

- **Goal No. 4** (0 votes): Increase new home starts determined by identified need in each community; percentage to vary based on individual community.

Assets:

- People: Jan Morrison, City and County Representatives, U.S. Department of Agriculture, Nevada Real Estate Division, Local Developers and Contractors, Local Real Estate Brokers Network
- Subsidized Senior Housing
- Abundance of Residential Lots

Capital:

- Required Financial Resources

Barriers:

- No Barriers Identified

**Selected Economic Development Capacity Building Area No. 3, *Marketing and Attraction***

- **Goal No. 1** (4 votes): Create an online marketing campaign highlighting economic opportunities of the region that will increase Northeastern Nevada Regional Development Authority website visits by 30 percent over the next two years.

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Assets:

- No Assets Identified

Capital:

- Required Financial Resources

Barriers:

- No Barriers Identified
- **Goal No. 2** (4 votes): Create additional guide for tourism and recreation working with the six county's visitor centers by December 2020; partner with national and international brands to promote rural Nevada "when rural thrives, America thrives".

Assets:

- Area Convention, Visitors and Tourism Authorities
- Chambers of Commerce
- Northeastern Nevada Regional Development Authority
- HAD
- Main Street Program (Nevada Governor's Office of Economic Development)

Capital:

- Needed Affective Marketing Campaign (Specific Targeting: Who, Why, How)
- Individuals with Necessary Marketing and Coordination Skills
- Required Financial Resources

Barriers:

- Barrier: Ineffective Message, Targeting of Wrong Market
- Internal or External Source? Internal
- **Goal No. 3** (1 vote): Collaborate throughout the region to share resources, ideas, efforts, successes to coordinate activities and 'draw' in an effort to promote regional economic development by December 2020.

Assets:

- No Assets Identified

Capital:

- No Capital Needs Identified

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Barriers:

- No Barriers Identified
- **Goal No. 4** (0 votes): Create marketing campaign that highlights the region's cultural and recreational opportunities and events by 2021.

Assets:

- No Assets Identified

Capital:

- No Capital Needs Identified

Barriers:

- No Barriers Identified

**Selected Economic Development Capacity Building Area No. 4, *Technology Development***

- **Goal No. 1** (5 votes): Partner with Amazon and Google for broadband Internet connectivity to support and encourage Williams Telecommunication to provide access to rural communities by 2021.

Assets:

- No Assets Identified

Capital:

- No Capital Needs Identified

Barriers:

- No Barriers Identified
- **Goal No. 2** (2 votes): Partners with Google Loon to improve Internet and connectivity and use as a model for national rural communities within five years.

Assets:

- Great Basin College
- StartUpNV
- Google
- Tesla
- Switch
- Apple

- 
- Solar Power Providers

Capital:

- Needed High Speed Internet Connectivity
- Additional Investment Interest from Silicon Valley (California)
- Required Infrastructure (“Last Mile”); Specifically Rail
- Required Financial Resources
- Legislative Change (Regulatory)

Barriers:

- Barrier: “Last Mile” of Rail and Infrastructure Connection, Growing Automation, Rapid Change in Technology
  - Internal or External Source: External
  - Source of Barrier: Costly Infrastructure Connections; Accessibility of Infrastructure
  - Impact Goal or Plan? Impact Goal but Possibly Entire Plan (All Goals)
- **Goal No. 3** (0 votes): To improve infrastructure of broadband availability throughout community which will essentially increase Internet speed and access by 20 percent annually over the next five years.

Assets:

- Current Local Internet Providers
- People: Jo Jo Myers, Ric Gratham (City IT Department)
- Physical: Fiber Optic Lines

Capital:

- Required Financial Resources

Barriers:

- No Barriers Identified
- **Goal No. 4** (0 votes): Develop two options to address broadband shortages in the next 12 months.

Assets:

- No Assets Identified

Capital:

- No Capital Needs Identified

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Barriers:

- No Barriers Identified

**Selected Economic Development Capacity Building Area No. 5, *Small Business, Entrepreneurship, Innovation***

- **Goal No. 1** (4 votes): To offer a tax incentive program/break to small businesses employing more than 30 employees, including the number of small businesses in our region by 30 percent by 2022.

Assets:

- No Assets Identified

Capital:

- Required Financial Resources

Barriers:

- No Barriers Identified

- **Goal No. 2** (3 votes): Develop a competitive think tank regionally for small businesses by 2022.

Assets:

- No Assets Identified

Capital:

- No Capital Needs Identified

Barriers:

- No Barriers Identified

- **Goal No. 3** (2 votes): Educate small business community on closing the economic gap to stop the goods and services leakage by 2021.

Assets:

- People: Small Business Owners, New Prospective Small Business Owners
- Physical: Downtown/Main Street Locations, Supply of Vacant Buildings
- Voluntary: Chambers of Commerce, Main Street Program (Nevada Governor's Office of Economic Development), Convention, Visitor and Tourism Authorities

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- Formal Institutions: Nevada Governor’s Office of Economic Development, U.S. Department of Agriculture Rural Development, Northeastern Nevada Regional Development Authority, Nevada Small Business Development Center, Great Basin College Small Business Development Office

Capital:

- Additional Training
- Change in the Existing Business Culture
- Required Financial Resources
- Needed Technology and Innovations
- Development of a Stronger Small Business Network

Barriers:

- No Barriers Identified
- **Goal No. 4** (2 votes): Educate residents to support local businesses, create a ‘shop small business Saturday’ event; partner with StartUpNV to grow rural entrepreneurship ecosystems by holding a rural pitch conference in May 2021.

Assets:

- StartUpNV
- U.S. Small Business Administration
- Main Street Program (Nevada Governor’s Office of Economic Development)
- Nevada Small Business Development Center, Great Basin College Small Business Development Office

Capital:

- Development of Needed Incentives
- Support, Information, and Educational Programs
- Needed Incubator Space
- Required Financial Resources
- Change in Community Culture (Acceptance of Risk)
- Individuals Willing to Participate

Barriers:

- Barrier: Perceived Negative Business Environment, Government Regulation (Licensing and Permitting), Access (Political Leaders too Conservative), Rise in Automation Practices, Internet Sales, Corporate (“Big Box Retail”) Pressures, “Broken” Fiscal System in Nevada
- Internal or External Source? Both Internal and External

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## 8.0 Plan of Action and Evaluation and Performance Measures

This section presents an overview of the results for Stronger Economies Together Module 7, *Planning for Success*, and Strong Economies Together Module 8, *Measuring for Success*, completed by workshop participants who participated in the third regional strategic economic development planning workshop held in Ely, Nevada on November 14, 2019.

### 8.1 Identifying Targeted Economic Development and Regional Conditions

Stronger Economies Together Module 7, *Planning for Success*, asked workshop participants who participated in the third regional strategic economic development planning workshop held on November 14, 2019 to identify specific **conditions** that they would like to change as part of the successful implementation of the new five-year Comprehensive Economic Development Strategy. Workshop participants were also asked to identify accompanying **behaviors**, defined as the concrete actions that individuals or groups can take in order to alter the underlying conditions, and a set of accompanying **attitudes**, **behaviors**, and **skills**, defined as the elements individuals or a group needed to learn or develop in order to affect the desired change, for each identified condition.

The following is a list of specific conditions, and the accompanying behaviors and attitudes, behaviors, and skills, as identified by workshop participants for each of the six targeted industry sectors and for each of the five selected economic development capacity building areas.

#### Targeted Industry Sector No. 1, *Agriculture*

- Condition No. 1: Fewer Hunters, More Tags, Fewer Feral Horses
- Condition No. 2: Increase Livestock Inventory
  - Promote ecological benefits of grazing.
  - Knowledge of agriculture taught in classrooms.
- Condition No. 3: Downstream Processing Plant
  - Hemp, Cannery, Meat, Wild Game Processing
  - Biomass Development
    - Attitude Change: a business needs to explore and train the systems (business plan).
    - Behavior: develop a roadmap, how-to program and public on local media.
- Condition No. 4: Northeastern Nevada Regional Development Authority to Complete a Feasibility Study
  - Attitude Change: ‘feral horses are evil’ (people do not understand).
  - Behavior: U.S. Bureau of Land Management policies.



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## **Targeted Industry Sector No. 2, *Healthcare***

- Condition No. 1: More Clinics and Assisted Living Facilities
- Condition No. 2: Less Outsourcing of Medical Procedures
  - Attitude Change: change ‘local medicine is substandard’ attitude.
  - Behavior: educate and promote success stories of local medical care providers.
- Condition No. 3: Mental Health Service Points; Transitional Housing; Assisted Living; Shelter Housing
  - Attitude Change: non-profit assessment and publication on identified needs.
  - Behavior: identify a business model for operation of needed services and housing needs.
- Condition No. 4: Complete a Regional Needs Assessment
  - Attitude Change: not enough education on preventative care.
  - Behavior: more investment in healthcare.

## **Targeted Industry Sector No. 3, *Mining***

- Condition No. 1: Rail Line(s) to Support Mining Operations
- Condition No. 2: Suppliers Set-Up Locally Instead of Out-of-State
  - Attitude Change: cost does not trump local sourcing.
  - Behavior: encourage local sourcing over out-of-state (make this a priority).
- Condition No. 3: Smelter and/or Processor Facility
  - Attitude Change: determine a profit/knowledge partnership plan.
  - Behavior: create regional mining collaboration in order to define the market.
- Condition No. 4: Spearhead Collaboration Among the Mines within the Region
  - Attitude Change: long-term vision for transportation.
  - Behavior: apply for a Tiger Grant (Rail Line).

## **Targeted Industry Sector No. 4, *Outdoor-Oriented Tourism and Recreation***

- Condition No. 1: Nevada Department of Transportation Phase II for Ely Downtown (Splash Pad, 1<sup>st</sup> Friday’s)
- Condition No. 2: Marketing and Outreach in Order to Increase Tourism
  - Knowledge: local population needs to seek out local opportunities.
  - Behavior: build local support in order to encourage regional ‘stay’cations.
- Condition No. 3: Trail Program and Family-Friendly Development
  - Attitude Change: tourism groups to develop a regional public campaign to create awareness.
  - Behavior: create and support volunteerism; create a book detailing regional trails.

- 
- Condition No. 4: Garner and Increase Public Input
    - Attitude Change: emphasis on and education about the arts.
    - Behavior: municipal and county regional contribution to arts and downtown areas.

### **Targeted Industry Sector No. 5, *Vocational Trades and Construction***

- Condition No. 1: More Local-Based Training
- Condition No. 2: Private and Public-Sector Programs Designed to Increase the Number of Locally Skilled Labor (Reduce Outsourcing)
  - Attitude Change: college does not automatically equal success.
  - Knowledge: promoting a vocational trades and construction career and the benefits of this type of career path.
  - Behavior: promote trades a viable and worthwhile occupation (including an agriculture-based career).
- Condition No. 3: Post-High School ‘VoAg’ (Vocational-Agriculture) Certificate; Apprenticeships and Mentorships Beyond Mining
  - Attitude Change: ask retired professionals to volunteer time to re-educate youth.
  - Behavior: community buy-in to match students with vocational opportunities.
- Condition No. 4: Reach Out with Businesses and Great Basin College and Others to Create a Vocational Trades and Construction Education Program
  - Attitude Change: work and career; self-pride.
  - Behavior: more emphasis placed on the development of vocational trades and construction skill development.

### **Targeted Industry Sector No. 6, *Wholesale Trade***

- Condition No. 1: Rail Line to Export Wholesale Goods; Airport Development (Producer, Shipping)
- Condition No. 2: Keep Local Sources Goods Local (ex: Feed to Dairy, Bring Dairy to Nevada)
  - Knowledge: educator on valued-added options.
  - Behavior: incentivize end user production of natural resources.
- Condition No. 3: Development of a Marijuana Processing Plant
  - Attitude Change: find a developer/private-sector partner.
  - Behavior: educate the public and existing business community regarding this industry.
- Condition No. 4: Identify and Determine Suitable Location(s)

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- Attitude Change: vision for industrial-based development with focus on wholesale trade industry.
  - Behavior: investment in needed transportation infrastructure to support further wholesale trade industry development.

### **Selected Economic Development Capacity Building Area No. 1, *Education and Training***

- Condition No. 1: Development of a New Construction Trade School (Train the Local Workforce)
- Condition No. 2: Five New Apprenticeships Post-High School; Identify the Leaders in the Construction Industry Sector
  - Attitude Change: value of a non-college certificate (money and income benefits).
  - Behavior: change attitude of non-college bound individuals.
- Condition No. 3: Develop a Construction Trades Education Program Either at the High School or College Level
  - Knowledge: benefits of agriculture in the classroom.
  - Behavior: promote the trades as a viable worthwhile occupation and career.
- Condition No. 4: Formalize Existing Non-Formalized Partnerships and Relationships
  - Attitude: attitude on work and career/self-pride.
  - Behavior: promote the trades as an alternative to college (life and math skills).

### **Selected Economic Development Capacity Building Area No. 2, *Housing Development***

- Condition No. 1: Encourage Developers to Pre-Sell Units
- Condition No. 2: Additional Development of Affordable Single-Family Housing
  - Attitude: a non-profit may need to learn how to develop a housing plan and submit for construction to appropriate local government authorities.
  - Behavior: start small by focusing on the development of one new affordable housing unit at a time.
- Condition No. 3: Increase Housing Affordability by 25 Percent (Based Upon Need, Not What Exists in the Existing Housing Stock)
  - Behavior: encourage permanent residence (Attitude: the region is not a bad place to live).
  - Behavior: encouraging government to reduce regulations (Attitude: incentives create long-term benefit; Knowledge: get industry input).
- Condition No. 4: Formalization of Existing Non-Formal Partnerships
  - Attitude: pride and value in home ownership.
  - Behavior: better individual financial skills.

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### **Selected Economic Development Capacity Building Area No. 3, *Marketing and Attraction***

- Condition No. 1: Community-Wide Comprehensive Advertising Plan
- Condition No. 2: An Outreach Program to Match the Outdoor Opportunities with a Supplier (Regionally)
  - Attitude: a chamber of commerce (or multiple chambers within the region partnered together) may need to develop a shopping campaign.
  - Behavior: encourage individuals to shop regionally.
- Condition No. 3: Increase Site Visits by Potential Companies to Five Per Week Throughout the Region
  - Attitude Change: encourage community pride.
  - Knowledge: explain what change and growth could look like).
  - Behavior: encourage individuals to promote/share marketing material and websites, etc.
- Condition No. 4: Develop a Regional Marketing Plan for Northeastern Nevada
  - Attitude Change: teach benefits of tourism.
  - Behavior: improved attitude toward tourism and visitors in general.

### **Selected Economic Development Capacity Building Area No. 4, *Technology Development***

- Condition No. 1: Improved Broadband and Local Information Technology Services
- Condition No. 2: Reliable and High Speed Broadband
  - Attitude Change: government may need to research other area activities and approaches.
  - Behavior: consider diverse and alternative models to the development of reliable and high speed Broadband services.
- Condition No. 3: Secure Broadband Access Along Major Travel Corridors (Battle Mountain, Elko, Ely, West Wendover, Winnemucca)
  - Attitude Change: must understand that more services (Broadband) will require additional financial investment.
  - Behavior: convince people to be willing to pay a little more than what they are used to in order to develop the service.
- Condition No. 4: Develop an Inventory of Providers Including a List of Capabilities and Services
  - Attitude Change: change attitude toward support for an assessment of existing Broadband infrastructure.
  - Behavior: development and implementation of a regional Broadband development initiative.

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### **Selected Economic Development Capacity Building Area No. 5, *Small Business, Entrepreneurship, Innovation***

- Condition No. 1: Development of a New Downtown Business Plans (As Needed) Including Incentives for New and Small Businesses
- Condition No. 2: Development of an Entrepreneurial Ecosystem throughout the Region; Development of a Customer Service Training Program
  - Attitude Change: develop awareness of the impacts that retail leakage has on the region's economy including the effects on local communities.
  - Behavior: cut or reform local government regulations in order to support new and small business development (focus on the adaptive reuse of older vacant buildings).
- Condition No. 3: Establish 'Buy-Local' or 'Shop-Local' Campaigns; Develop Entrepreneur Training and Mentor Program
  - Promote Amazon 'Facts' (Attitude Change: support local; Knowledge: good stuff can be purchased nearby from businesses located throughout the region).
  - Encourage people to think 'outside the box', create and innovate (Attitude Change: promote 'can do' attitude; Knowledge: resources available for entrepreneurs).
- Condition No. 4: Model Retail and Business Leakage and Quantify Small Business Impacts in a Regional Report
  - Attitude Change: change attitude toward taking business risks.
  - Behavior: education in business and opportunities to start-up a new business.

## **8.2 Development of an Action Plan for the Strategic Economic Development Goals**

The final component of Stronger Economies Together Module 8, Measuring for Success, completed by workshop participants who participated in the third regional strategic planning workshop held on November 14, 2019 was the creation of a general strategy and action plan for the achievement of each of the various goals developed for each of the six targeted industry sectors and for each of the five selected economic development capacity building areas developed during the previous Stronger Economies Together modules. Workshop participants were asked to develop at least one specific actionable item for each of the six targeted industry sectors and for each of the five selected economic development capacity building areas and generally identify a person(s) or organization(s) responsible for the actionable item, develop a realistic timetable for achievement of the actionable item, and a basic checkpoint or benchmark.

### **Targeted Industry Sector No. 1, *Agriculture***

- Actionable Item: Collaborate with Nevada Cattleman, Farm Bureau, Future Farmers of America, University of Nevada Cooperative Extension, and K-12 Schools to develop

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Fact Sheets to Ensure Implementation of Agriculture-Based Curriculum in the Region's Various School Districts within Three Years.

- Curriculum to focus on the economic benefits of an agriculture-based career (job opportunities, income opportunities, etc.).
- Measurable: added Future Farmers of America participation.
- Checkpoint: First Year, Evaluate Current Programs; First Year, 20 percent increase in Future Farmers of America regional participation and enrollment.

#### **Targeted Industry Sector No. 2, *Healthcare***

- Actionable Item: Work with Regional Healthcare Providers to Promote Organizational Success Stories
  - Measurable: increase patient count year-over-year.

#### **Targeted Industry Sector No. 3, *Mining***

- Actionable Item: Highlight the Economic Value of Local Dollar Exchange and Reduction of Leakage within the Region's Mining and Natural Resource Extraction Supply Chain
  - Measurable: development of fact sheets and studies highlighting the economic value of capturing identified supply chain leakages.
  - Measurable: a reduction in the dollar-value of supply chain leakages of 20 percent within the next three to five years.

#### **Targeted Industry Sector No. 4, *Outdoor-Oriented Tourism and Recreation***

- Actionable Item: Integrate and Bolster Relationships with Regional Convention, Visitors and Tourism Authorities
- Actionable Item: Develop an Integrated Regional Marketing Committee

#### **Targeted Industry Sector No. 5, *Vocational Trades and Construction***

- Actionable Item: Engage K-12 School Districts within the Region to Develop a Program Designed to Promote Local and Regional Opportunities that Highlights the Vocational Trades
- Actionable Item: Improve and Expand Shop/Welding/Woodworking Curriculum within the K-12 Schools
- Actionable Item: Identify and Assist Great Basin College in Filling the Gaps in Vocational Trade Training Curriculum

#### **Targeted Industry Sector No. 6, *Wholesale Trade***

- Actionable Item: Partner with Lander Grant University System (Nevada System of Higher Education and the University of Nevada, Reno) to Identify and Promote Opportunities Based on Available Natural Resources within the Region

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### **Selected Economic Development Capacity Building Area No. 1, *Education and Training***

- Actionable Item: Engage K-12 School Districts within the Region to Develop a Program Designed to Promote Local and Regional Opportunities that Highlights the Vocational Trades
- Actionable Item: Improve and Expand Shop/Welding/Woodworking Curriculum within the K-12 Schools
- Actionable Item: Identify and Assist Great Basin College in Filling the Gaps in Vocational Trade Training Curriculum

### **Selected Economic Development Capacity Building Area No. 2, *Housing Development***

- Actionable Item: Work with Local Governments to Develop and Employ Incentives for Builders and Contractors

### **Selected Economic Development Capacity Building Area No. 3, *Marketing and Attraction***

- Actionable Item: *to be developed upon adoption of this Comprehensive Economic Development Strategy by the Northeastern Nevada Regional Development Authority*

### **Selected Economic Development Capacity Building Area No. 4, *Technology Development***

- Actionable Item: Establish Entrepreneur Workshops focused on Technology Development for the Purpose of Education and Networking

### **Selected Economic Development Capacity Building Area No. 5, *Small Business, Entrepreneurship, Innovation***

- Actionable Item: *to be developed upon adoption of this Comprehensive Economic Development Strategy by the Northeastern Nevada Regional Development Authority*

In addition to specific actionable items for these six targeted industry sectors and five targeted economic development capacity building areas, workshop participants identified a series of actionable items specifically targeting the additional development of improved broadband connectivity within the region. Specifically, workshop participants suggested the development and implementation of a new property tax assessment to directly support the development of needed broadband infrastructure. Workshop participants argued that the Northeastern Nevada Regional Development Authority, in partnership with the region's various local municipal and county governments and in partnership with other rural (non-metro) communities and regions throughout the state of Nevada, should lead this initiative and that the establishment of this new property tax assessment should be completed within the next five years.

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## 9.0 Strategic Economic Development Goals for the Member Counties and Communities

As part of this wider regional Comprehensive Economic Development Strategy for the Northeastern Nevada Regional Development Authority, companion Comprehensive Economic Development Strategy documents for Elko County (including the communities of the City of Carlin, City of Elko, City of Wells, City of West Wendover and the communities of Jackpot and Spring Creek), Eureka County, Lander County, and White Pine County were developed. As referenced earlier in this technical report, Humboldt County had already completed their own strategic economic development plan prior to the start of this regional process and Pershing County was admitted to the Northeastern Nevada Regional Development Authority after this regional process had been completed.

While each individual county and community will be primarily responsible for the implementation and administration of these community and county-level Comprehensive Economic Development Strategy plans, the Northeastern Nevada Regional Development Authority will provide assistance and coordination support to each community and county. Through implementation and administration of this Comprehensive Economic Development Strategy for the entire region, the Northeastern Nevada Regional Development Authority will indirectly assist with implementation and administration of the community and county-level Comprehensive Economic Development Strategy plans. This section presents the specific economic development goals and objectives for the various community and county-level Comprehensive Economic Development Strategy plans developed as part of this regional strategic economic development planning initiative.

### 9.1 Elko County

The development of a new five-year Comprehensive Economic Development Strategy for Elko County involved the development of several individual community-level strategic economic development plans for the City of Carlin, the City (and County) of Elko, the City of Wells, the City of West Wendover, and the communities of Jackpot and Spring Creek. Development of these individual community-level Comprehensive Economic Development Strategy documents were pursued due to the unique geographic make-up of Elko County. As most of Elko County's population is located in relatively isolated geographic locations throughout the county, development of specific strategic economic development plans for each individual community could better address the unique and specific economic development needs of each individual community.

The development of these individual community-level plans, including the development of community focused strategic economic development vision statements and strategic economic development goals, were developed during a series of strategic economic development planning workshops held between July 22, 2019 through July 27, 2019 in Carlin, Nevada, Elko, Nevada,



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and West Wendover, Nevada and between August 19, 2019 and August 22, 2019 in Carlin, Nevada and Elko, Nevada and on September 5, 2019 and September 6, 2019 in West Wendover, Nevada. These workshops were facilitated by faculty from the University Center for Economic Development, part of the College of Business at the University of Nevada, Reno.

#### 9.1.a City of Carlin Comprehensive Economic Development Strategy for 2020 through 2025

As part of the new five-year Comprehensive Economic Development Strategy for the City of Carlin for 2020 through 2025, the following strategic economic development vision has been developed:

***What We Will Do:** The City of Carlin will create, grow and sustain a **thriving** community for our citizens, our families, our children, our businesses, and our visitors.*

***How We Will Do It:** The City of Carlin will build our capacity to support the economic, social, fiscal, and cultural characteristics of our community through business and job and community improvement.*

As part of this new five-year strategic economic development vision, the following eight strategic economic development goals and objectives have been developed for the City of Carlin:

- **Goal No. 1:** By July 1, 2024, the City of Carlin will be actively and progressively moving toward completion of needed and identified infrastructure improvements.
- **Goal No. 2:** By July 1, 2024, identify, plan, develop and complete one senior housing and/or assisted living project.
- **Goal No. 3:** By FY 2020-21, an attainable funding source will be identified and secured in order to replace and rehabilitate essential infrastructure.
- **Goal No. 4:** Identify and successfully recruit and open a reputable financial institution with full banking services that would serve Carlin by July 1, 2020.
- **Goal No. 5:** By 2021, develop a framework of incentives to recruit targeted industries.
- **Goal No. 6:** Develop a Community Development Corporation (CDC) or equivalent economic development organization (Board, Chamber, or Business Association) by July 1, 2020 to recruit targeted businesses.
- **Goal No. 7:** By July 1, 2023, identify, plan and develop at least one market-rate housing project.
- **Goal No. 8:** By July 1, 2024, complete at least one tourism-related project and/or initiative.

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While development of the new strategic economic development vision and development of the new 2020 through 2025 strategic economic development goals was completed by various public-sector, for-profit private-sector, and non-profit private-sector sector representatives, the City of Carlin (government of), including the City of Carlin City Council and the City of Carlin City Manager's Office, will serve as the standing Comprehensive Economic Development Strategy Committee for the City of Carlin. The City of Carlin (government of) will be the primarily responsible entity for overall implementation, evaluation, and administration of the Comprehensive Economic Development Strategy for the City of Carlin for 2020 through 2025.

9.1.b City of Elko (Elko County in General) Comprehensive Economic Development Strategy for 2020 through 2025

As part of the new five-year Comprehensive Economic Development Strategy for the City of Elko, the area immediately surrounding the City of Elko, and for Elko County in general for 2020 through 2025, the following strategic economic development vision has been developed:

*Elko will be a magnet for economic activity in the intermountain west, attracting a diverse and professional workforce. Residents will enjoy a lifestyle that embraces the future while honoring our rich heritage.*

*Through regional collaboration, Elko will aggressively pursue implementation of technology and investment to drive economic diversification and enhance quality of life for all who call Elko home.*

As part of this new five-year strategic economic development vision, the following four strategic economic development goals and objectives have been developed for the City of Elko, the area immediately surrounding the City of Elko, and for Elko County in general:

- **Goal No. 1:** Increase access to reliable Internet (at least 15 BPS consistently) through the recruitment of an additional provider to serve the City of Elko. To bring fiber supported Internet to Elko by December, 2020.
- **Goal No. 2:** Reduce the percentage of population living below the poverty line by 20 percent in the City of Elko by July 1, 2024.
- **Goal No. 3:** Increase commercial air service to and from Salt Lake City and Reno by 2025. To have two additional airlines servicing the Elko area with direct flights from and to Reno, Nevada by July 1, 2024.
- **Goal No. 4:** Formalize and establish a process of collaboration between Spring Creek Association, City of Elko, and Elko County and convene the first meeting by January 30, 2020.

The development of the new strategic economic development vision and development of the new 2020 through 2025 strategic economic development goals for the City of Elko, the area immediately surrounding the City of Elko, and for Elko County was completed by various

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public-sector, for-profit private-sector, and non-profit private-sector sector representatives. These individuals will continue to serve as the Comprehensive Economic Development Strategy Committee for the City of Elko, the area immediately surrounding the City of Elko, and for Elko County in general and, in partnership with the Northeastern Nevada Regional Development Authority, will be responsible for the overall implementation, evaluation, and administration of the Comprehensive Economic Development Strategy for the City of Elko, the area immediately surrounding the City of Elko, and for Elko County in general for 2020 through 2025.

#### 9.1.c City of Wells Comprehensive Economic Development Strategy for 2020 through 2025

As part of the new five-year Comprehensive Economic Development Strategy for the City of Wells for 2020 through 2025, the following strategic economic development vision has been developed:

*The City of Wells welcomes the world to a business friendly and empowering environment that embraces our values of team work, reliability and passion. In creating an environment that fosters economic growth through entrepreneurial and vocational work force education, we will grow smartly.*

As part of this new five-year strategic economic development vision, the following six strategic economic development goals and objectives have been developed for the City of Wells:

- **Goal No. 1:** Launch new dual enrollment construction/trades program at local high schools by August 2021.
- **Goal No. 2:** Launch comprehensive program that educates and provides resources to local small business by July 31, 2020 (focused on retention with the development of a tool box and start-up package).
- **Goal No. 3:** Recruit and open at least one company within a non-traditional industry that creates 20-30 new jobs and investment between \$10 million and \$15 million in CAPEX by 2021.
- **Goal No. 4:** Increase new business development by 5 new startups by December 2024 (1 per year) by utilizing Goal No. 2.
- **Goal No. 5:** Build 20 new quality housing units in Wells by December 2024 by utilizing incentive programs and training and a streamlined permitting process.
- **Goal No. 6:** Acquire U.S. Highway 40 through Wells by July 31, 2021.

While development of the new strategic economic development vision and development of the new 2020 through 2025 strategic economic development goals was completed by various public-sector, for-profit private-sector, and non-profit private-sector sector representatives, the City of Wells (government of), including the City of Wells City Council and the City of Wells City Manager's Office, will serve as the standing Comprehensive Economic Development Strategy

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Committee for the City of Wells. The City of Wells (government of), in partnership with the Northeastern Nevada Regional Development Authority, will be the primarily responsible entity for overall implementation, evaluation, and administration of the Comprehensive Economic Development Strategy for the City of Wells for 2020 through 2025.

#### 9.1.d City of West Wendover Comprehensive Economic Development Strategy for 2020 through 2025

As part of the new five-year Comprehensive Economic Development Strategy for the City of West Wendover for 2020 through 2025, the following strategic economic development vision has been developed:

*Within the next five years, the City of West Wendover, as a city and as a community, will become a more self-supporting community for our residents and businesses by providing basic and expanded needed resources and services. The community will strive to maintain its existing rural identity and culture while growing as a destination for a diversity of businesses, tourism activities and recreational opportunities.*

As part of this new five-year strategic economic development vision, the following five strategic economic development goals and objectives have been developed for the City of West Wendover:

- **Goal No. 1:** Within two years, recruit, open, and operate a 24 hour a day/7 day a week Urgent Care Facility with x-ray services, emergency services, family care services, OB/GYN services, and dialysis services.
- **Goal No. 2:** Within two years, provide access to natural gas to replace expensive propane and increase reliability to encourage business development and lower costs.
- **Goal No. 3:** Within three years, develop and open a Rec Center with basketball courts, performance stage, indoor walking track, kitchen facility, weight room, exercise and yoga facilities, and a game room.
- **Goal No. 4:** Within five years, increase the community's total population by 5 percent (over five years between year one and year five) benchmarked relative to existing income and wage levels (to ensure current levels in incomes and wages benchmarked to 2019 levels).
- **Goal No. 5:** Within five years, recruit, open and keep open one new major (diversified) employer in the community.

The development of the new strategic economic development vision and development of the new 2020 through 2025 strategic economic development goals for the City of West Wendover was completed by various public-sector, for-profit private-sector, and non-profit private-sector sector representatives. These individuals will continue to serve as the Comprehensive Economic

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Development Strategy Committee for the City of West Wendover and, in partnership with the Northeastern Nevada Regional Development Authority, will be responsible for the overall implementation, evaluation, and administration of the Comprehensive Economic Development Strategy for the City of West Wendover for 2020 through 2025.

9.1.e A Comprehensive Economic Development Strategy for the Communities of Jackpot and Spring Creek for 2020 through 2025

As part of the new five-year Comprehensive Economic Development Strategy for the unincorporated communities of Jackpot, Nevada and Spring Creek, Nevada for 2020 through 2025, the following strategic economic development vision has been developed:

*The foothills of the Ruby Mountains will cultivate and integrate new businesses creating a diverse economy through education and fostering health and wellness of our residents while embracing the natural beauty of our rural surroundings.*

As part of this new five-year strategic economic development vision, the following five strategic economic development goals and objectives have been developed specifically for the communities of Jackpot, Nevada and Spring Creek, Nevada:

- **Goal No. 1:** Grow technical educational programs for current and potential industries by 2024. Identify the technical needs and capacity required to create an educational program with three new industry sectors within one year of adoption of the strategic plan.
- **Goal No. 2:** Increase access to capital for small business development by 3 percent by 2022.
- **Goal No. 3:** Increase affordable housing for middle to low income buyers by 5 percent through the use of assistance organization by 2024.
- **Goal No. 4:** The Northeastern Nevada Regional Development Authority will provide population and demographic statistical information to potential healthcare provider to establish a business within four years in Spring Creek.
- **Goal No. 5:** Promote a healthy lifestyle. Spring Creek will produce a Facebook page which will provide outdoor and recreational activities within six months.

The development of the new strategic economic development vision and development of the new 2020 through 2025 strategic economic development goals for the communities of Jackpot, Nevada and Spring Creek, Nevada was completed by various public-sector, for-profit private-sector, and non-profit private-sector sector representatives. These individuals will continue to serve as the Comprehensive Economic Development Strategy Committee for the communities of Jackpot, Nevada and Spring Creek, Nevada and, in partnership with the Northeastern Nevada Regional Development Authority, will be responsible for the overall implementation, evaluation, and administration of the Comprehensive Economic Development Strategy for the communities of Jackpot, Nevada and Spring Creek, Nevada for 2020 through 2025.

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Further implementation, evaluation, and administration of the Comprehensive Economic Development Strategy for Jackpot, Nevada and Spring Creek, Nevada will also be done in tandem with the implementation, evaluation, and administration of the new five-year Comprehensive Economic Development Strategy for the City of Elko, the area immediately surrounding the City of Elko, and for Elko County in general. Coordination with Elko County is required largely due to the unincorporated nature of both Jackpot, Nevada and Spring Creek, Nevada.

## 9.2 Eureka County

The Comprehensive Economic Development Strategy for Eureka County for 2020 through 2025 was developed during a series of strategic economic development planning workshops held on July 18, 2019 in Eureka, Nevada and on August 15, 2019 in Eureka County. These workshops were facilitated by faculty from the University Center for Economic Development, part of the College of Business at the University of Nevada, Reno. As part of the new five-year Comprehensive Economic Development Strategy for Eureka County for 2020 through 2025, the following strategic economic development vision has been developed:

*Eureka County will diversify, innovate, and grow the county's economy through continued diversification, innovation and growth by investing in key industry sectors, including mining, agriculture, natural resources and small business development and expansion.*

*Eureka County values our rich rural heritage and lifestyle and future economic development diversification, innovation, and growth will be pursued only if it is consistent with the rich rural heritage and lifestyle that we value.*

Eureka County, prior to the development of its new five-year Comprehensive Economic Development Strategy for 2020 through 2025, had an existing Comprehensive Economic Development Strategy completed and adopted in 2014. As part of the development of the new five-year Comprehensive Economic Development Strategy, several of the individual goals and objectives from the 2014 Comprehensive Economic Development Strategy were selected for inclusion into the new five-year strategy for 2020 through 2025. These goals and objectives from the 2014 Comprehensive Economic Development Strategy for Eureka County, extended into the 2020 to 2025 period, are as follows:

- **Goal No. 1:** Expand and Diversify the Eureka County Economy
  - Objective 1.1: Increase the number of resident employees as a percentage of total mining employment in Eureka County.
  - Objective 1.2: Increase the number of and total employment by mines in Eureka County.
  - Objective 1.3: Expand the number of non-mining basic industries located in Eureka County.
  - Objective 1.4: Increase the number of retail and service related business establishments in Eureka County.

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- **Goal No. 2: Retain and Expand Business**
    - Objective 2.1: Increase mining related purchases from Eureka County businesses.
    - Objective 2.2: Increase local government purchase from Eureka County businesses.
    - Objective 2.3: Increase state and federal purchases from Eureka County businesses.
    - Objective 2.4: Increase resident purchases from Eureka County businesses.
    - Objective 2.5: Increase purchases by County-based businesses from County-based businesses.
    - Objective 2.6: Identify and minimize barriers to existing business success.
    - Objective 2.7: Provide incentives for existing business expansion.
    - Objective 2.8: Increase snow water generated in the Diamond Mountains and related recharge of the Diamond Valley Aquifer. (Kept but De-Prioritized)
    - Objective 2.9: Utilize temporary beneficial secondary use of mine de-watered water in the vicinity of Diamond Valley for groundwater recharge purposes in Diamond Valley. (Kept but De-Prioritized)
    - Objective 2.10: Incentivize investment in water conservation technologies for irrigation in Diamond Valley.
    - Objective 2.11: Incentivize investment in replacement of existing high water crops with low water use and dry land crops in Diamond Valley.
    - Objective 2.12: Secure supplemental sources of water for aquifer storage and recharge in the Diamond Valley.
  - **Goal No. 3: Increase Availability of and Access to Capital for Business and Industrial Development in Eureka County.**
    - Objective 3.1 (formerly Objective 3.2): Increase Nevada State Bank Community Reinvestment Act related lending to local businesses.
    - Objective 3.2 (formerly Objective 3.3): Increase Rural Nevada Development Corporation lending to Eureka County businesses.
  - **Goal No. 4: Increase Visitation to and Spending in Eureka County.**
    - Objective 4.1: Minimize vacancy rates in area motels, hotels and RV parks.
  - **Goal No. 5: Establish and Maintain Relationships with Federal, State, and Local Government Economic Development Officials and Non-Governmental Parties**
    - Objective 5.1: Establish and maintain relationships with federal economic development officials.
    - Objective 5.2: Establish and maintain relationships with state economic development officials.
    - Objective 5.3 (formerly Objective 5.5): Establish and maintain relationships with non-governmental economic development related organizations.

Twelve new strategic economic development goals were developed specifically for the new five-year Comprehensive Economic Development Strategy for Eureka County for 2020 through 2025.

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These 12 new strategic economic development goals, tied to the new strategic economic development vision listed above, are:

- **Goal No. 1:** Within five years, will include two to seven medical services with urgent care, medical services, birthing center, assisted living, skilled nursing with hospice service to support the aging population of the county.
- **Goal No. 2:** Increase in tourism to achieve an 80 percent occupancy rate by 2020.
- **Goal No. 3:** Develop tourism potential with grants to develop historical resources.
- **Goal No. 4:** Recruit one large non-traditional industry (greater than \$250,000 CAPEX, 15 to 20 jobs) by December 2024.
- **Goal No. 5:** Light industry using a railhead at Beowawe to bring supplies in and products out.
- **Goal No. 6:** Establish small business loan (grant) program that offers two to three loans annually by December 2021.
- **Goal No. 7:** Increase visitors to Eureka County by 50 percent to 100 percent by December 2021.
- **Goal No. 8:** Increase events in Eureka County by 300 percent by December 31, 2020.
- **Goal No. 9:** Add three to five small businesses (\$5 to \$20,000 CAPEX, one to three jobs each) in Eureka County by December 2024.
- **Goal No. 10:** Mining diversification from gold – vanadium and Moly prospects.
- **Goal No. 11:** Collaborate with developers to build ten new homes per year on county lots starting in 2019.
- **Goal No. 12:** Increase recharge to Diamond Valley alluvial aquifer from future mining; dewatering in the flow system.

While development of a the new strategic economic development vision, evaluation of the existing 2014 strategic economic development goals and objectives, and development of the new 2020 through 2025 strategic economic development goals was completed by various public-sector, for-profit private-sector, and non-profit private-sector sector representatives, the Eureka County Board of County Commissioners will serve as the standing Comprehensive Economic Development Strategy Committee for Eureka County. The Eureka County Board of County Commissioners will be the primarily responsible entity for overall implementation, evaluation, and administration of the Comprehensive Economic Development Strategy for Eureka County for 2020 through 2025.



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## 9.3 Lander County

The Comprehensive Economic Development Strategy for Lander County for 2020 through 2025 was developed during a series of strategic economic development planning workshops held on July 15, 2019 and July 16, 2019 in Battle Mountain, Nevada and on August 12, 2019 and August 20, 2019 in Battle Mountain, Nevada. These workshops were facilitated by faculty from the University Center for Economic Development, part of the College of Business at the University of Nevada, Reno. As part of the new five-year Comprehensive Economic Development Strategy for Lander County for 2020 through 2025, the following strategic economic development vision has been developed:

***What We Want:*** *While respecting our community's existing cultural identity, Lander County will enhance the quality of life of our various communities.*

***How We Will Get It:*** *Lander County will aggressively pursue, create and implement programs and projects that create business opportunities and economic prosperity through the diversification of the County's local economy.*

As part of this new five-year strategic economic development vision, the following 11 strategic economic development goals and objectives have been developed for Lander County:

- **Goal No. 1:** Establish broadband connectivity throughout the county by July 2021 in partnership with the Northeastern Nevada Regional Development Authority and other communities throughout northeastern Nevada and the state of Nevada.
- **Goal No. 2:** Expand the existing water line to the airport in Battle Mountain by July 2020.
- **Goal No. 3:** Create and complete a new sewer system near the Battle Mountain Airport by June 2023.
- **Goal No. 4:** Complete the needed infrastructure for the Battle Mountain industrial park by 2022 in order to increase the overall size and capacity of the Battle Mountain industrial park by 20 percent.
- **Goal No. 5:** Create a multi-use vehicle testing facility in Lander County by 2024.
- **Goal No. 6:** Attract alternative agriculture manufacturing that creates and provides greater than ten new jobs at \$500,000 within five years.
- **Goal No. 7:** Establish a new workforce development program that exposes trade skills to 6 through 12 grades with graduation program that creates +5 graduates annually by 2022/2023 in partnership with the Northeastern Nevada Regional Development Authority, neighboring counties and communities in northeastern Nevada, and key educational institutions,

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- **Goal No. 8:** Expand three-phase power to Battle Mountain Airport industrial area by December 2020.
  - **Goal No. 9:** Increase tourism revenue by 20 percent in Lander County during a five-year period.
  - **Goal No. 10:** Acquire four telemedicine unites (two in Battle Mountain, one in Austin, one in Kingston) within three years.
  - **Goal No. 11:** Establish entrepreneurial work spaces with five rentable units by 2020.

The Lander Economic Development Authority will continue to serve as the Comprehensive Economic Development Strategy Committee for the five-year 2020 through 2025 period. The Lander Economic Development Authority is an advisory board to the Lander County Board of County Commissioners and acts as the lead agency for economic development within Lander County, including the communities of Austin, Battle Mountain, and Kingston.

## 9.4 White Pine County

Through a series of strategic economic development planning workshops facilitated by representatives from the Nevada Governor's Office of Economic Development and the U.S. Department of Agriculture Rural Development, a new five-year Comprehensive Economic Development Strategy has been developed for White County.

As part of the new five-year Comprehensive Economic Development Strategy for White Pine County for 2020 through 2025, the following strategic economic development mission and vision has been developed:

***White Pine County Mission:*** *White Pine County is creating a community with a diverse economy and "Ely"vated quality of life for our citizens and visitors through focused collaboration and cooperation.*

***White Pine County Vision:*** *As the premier destination for outdoor enthusiasts, Ely's vibrant downtown attracts all age groups. Our community is proud of our state-of-the-art infrastructure, quality housing at all price points and his home to the number one school district in the State. Welcome Home!*

As part of this new five-year strategic economic development vision, the following 13 strategic economic development goals and objectives have been developed for White Pine County:

- **Goal No. 1:** Develop a Comprehensive Outdoor Recreation/Tourism Plan to expand outdoor recreation accessibility and economic impact by developing outdoor businesses, services, and events.

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- **Goal No. 2:** Working with Main Street American Program, Revitalize Ely Downtown Area.
  - **Goal No. 3:** Work with economic development authorities to identify and recruit new Businesses.
  - **Goal No. 4:** Develop a community plan to address housing needs to address blight, assess needs, provide affordable housing, as well as trades recruitment or a trades educational program specific to housing needs.
  - **Goal No. 5:** Develop a comprehensive education plan for all county schools.
  - **Goal No. 6:** Develop a workforce plan to include partnerships with local industry, colleges, and high school.
  - **Goal No. 7:** Maintain and expand efforts related to securing water in White Pine County.
  - **Goal No. 8:** Address outdated infrastructure, make infrastructure available for development – Broadband-Sewer-Water-Paving.
  - **Goal No. 9:** Develop a way to build partnerships with federal and state agencies.
  - **Goal No. 10:** Develop an expansion plan for the airport.
  - **Goal No. 11:** Develop a county wide transportation plan.
  - **Goal No. 12:** Create a comprehensive broadband plan for White Pine County.
  - **Goal No. 13:** Reduce energy costs by making a natural gas option available.

On August 14, 2019, the White Pine County Board of County Commissioners adapted the *White Pine County Public Lands Policy Plan 2018* as part of the county's overall resiliency planning effort. This resiliency planning effort was developed and completed in tandem with the development of the new five-year Comprehensive Economic Development Strategy for White Pine County. Several of the specific goals and strategies developed as part of the county's resiliency planning effort, and incorporated into the new five-year Comprehensive Economic Development Strategy for White Pine County, include:

- Downstream manufacturing for hemp farm.
- Engage in mine closure planning.
- Work to streamline property transfer from the federal government.

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- Develop more effective strategies related to federal government issues of wild horse and sage grouse issues that are impacting the agricultural and tourism (hunting) industries.
  - Establish a town site 40 to 50 miles east of Ely, Nevada to provide housing and development related to the mining industry.
  - Actively work on improving and expanding transportation infrastructure, including: (1) engaging state and federal level officials to bring the proposed U.S. Interstate 11 corridor through White Pine County and Ely, and (2) renovate the rail system from Ely north.
  - Bring natural gas into White Pine County and Ely.
  - Work to diversify the economy.
  - Engage developers and identify other strategies for addressing housing.

A number of these goals and objectives, developed as part of White Pine County's resiliency planning efforts, were incorporated into the various goals and objectives developed for the new five-year Comprehensive Economic Development Strategy for White Pine County including the development of a plan to communicate concerns through the hiring of lobbyists, petitions, and the development of a comprehensive Awareness and Education Campaign.

As part of the development of new five-year Comprehensive Economic Development Strategy for White Pine County, a new 'strategy committee' was established. Community sectors and representatives selected for this 'strategy committee', that will continue to serve as the Comprehensive Economic Development Strategy Committee for White Pine County, include the following:

- Representatives of Local Businesses
- Local Government including Representation from White Pine County and the City of Ely
- Key Industry Sector Representatives
- Representatives from Finance and with Financial Experience
- Representatives from Agriculture including Farming and Ranching
- Environmental Representatives
- Specific Profession Representatives (Law, Medicine, Engineering, Education, etc.)
- Utilities and Utility Service Providers
- Community Organization Representatives

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- Workforce and Workforce Development Specialists
  - Community-Based Committees
  - Members of the Goshute and Ely Shoshone Tribes

This standing Comprehensive Economic Development Strategy Committee for White Pine County will have primary responsibility for ensuring implementation and administration of the new five-year Comprehensive Economic Development Strategy for White Pine County.